PRELIMINARY ASSESSMENT FOR ROBERT WOOLER COMPANY SITE

Dresher, Montgomery County, Pennsylvania
Dump Site No. PA-2700
EPA ID No. PAD987279387

Prepared Under:

EPA Work Assignment No. 85-12-3JZZ
Contract No. 68-W8-0085

February 1993

Prepared for:

HAZARDOUS WASTE MANAGEMENT DIVISION
U.S. Environmental Protection Agency

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Prepared By

ECOLOGY AND ENVIRONMENT, INC.
Philadelphia, Pennsylvania

Submitted by

Not Responsive Based on Revised Scope

E & E Task Leader

Approved by

USEPA Region III

Date

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1. INTRODUCTION

1.1 AUTHORIZATION

The Preliminary Assessment (PA) for the Robert Wooler Company (RWC) site was performed by Ecology and Environment, Inc. (E & E) under Contract Number 68-W8-0085 for the United States. Environmental Protection Agency (EPA), Region III, Alternative Remedial Contract Strategy (ARCS), EPA Work Assignment NO. 85-12-3JZZ. This PA was conducted under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the Resource Conservation and Recovery Act (RCRA). All work was performed in accordance with EPA Region III guidance, CERCLA, SARA, RCRA, and the National Contingency Plan of 1990.

1.2 SCOPE OF WORK

The purpose of the CERCLA PA investigation was to collect information concerning conditions at this site sufficient to assess the threat posed to human health and the environment, and to determine the need for additional action. The scope of the investigation included a review of available file information, interviews with people knowledgeable of previous activities at the site, a comprehensive target survey, and a site reconnaissance.

1.3 SUMMARY

RWC is an active commercial metal heat treatment facility located in Dresher, Pennsylvania. Operations began at the site in 1939 and have been modified and expanded in response to available technology.

ORIGINAL (Red)

The site was targeted for preliminary assessment after sampling of the RWC site well revealed that it was contaminated with trichloroethene (TCE), tetrachlorethene, 1,1,1-trichloroethane and 1,1-dichlorethene (Refs. 1, 17). The well was sampled in March 1989 as part of field efforts associated with the inspection of the nearby Selas Corporation facility and has not been sampled since (Ref. 1). RWC uses the well to supply non-contact cooling water for the heat-treating equipment. RWC maintained two on-site degreasers that used TCE from 1963 to 1985. Facility officials reported no spills or releases of TCE. Other on-site materials of note at the RWC site include mineral quenching oil, acrylic polymers, sodium molybdenate, anhydrous ammonia, and liquid nitrogen. No spills or releases of these materials were reported (Refs. 1, 2, 3).

Two aboveground storage tanks are located in a small fenced area on the southern corner of the facility building. One tank contains anhydrous ammonia, and one tank contains liquid nitrogen. Both tanks are maintained by National Ammonia Company and registered with the Pennsylvania Department of Environmental Resources (PADER). No spills or releases were reported by RWC personnel.

The site is located in a limited industrial zone, and it is surrounded by other limited industrial zones, open space, and medium-density residential areas (Ref. 5). The nearest residence is approximately (b) (9) of the facility (Refs. 3, 6). The nearest identified domestic supply well is located approximately (b) (9) (b) (9) of the site. Residents within a 4-mile radius of the site rely on both public and private supply sources for potable water. Both groundwater and surface water supplies are utilized (Refs. 1, 19, 20).

RWC maintained an on-site septic field until it was connected to the municipal sewer system in the early 1980s. The septic system was backfilled when the site was connected to the municipal system. Until February 1992, algaecide was discharged to the storm sewer that discharged to an unnamed tributary of Sandy Run Creek; Sandy Creek is located approximately 1,000 feet north of the site (Refs. 2, 3). RWC received a Notice of Violation (NOV) concerning the algaecide and ceased discharge to the storm sewers. Currently, the sanitary sewer connection receives a weekly discharge of backflushed green algaecide from the

cooling towers, or cascade units, by agreement with the Abington Wastewater Treatment Plant.

On November 5, 1992, E & E personnel [redacted] met with RWC personnel to perform a site inspection. The facility was active at the time of the inspection.

2. SITE DESCRIPTION AND HISTORY

2.1 LOCATION

RWC is located on the northwest corner of the intersection of the Limekiln Pike and Susquehanna Road in the Town of Dresher, Upper Dublin Township, Montgomery County, Pennsylvania (see Figure 2-1). The coordinates of the site are 40°08'23" north latitude and 75°09'57" west longitude. The site can be located on the United States Geological Survey (USGS) 7.5 Minute Series Map for Ambler, Pennsylvania by measuring 5-3/4 inches from the east edge and 2-5/8 inches from the south edge (Ref. 6).

2.2 SITE LAYOUT

RWC is a heat-treating facility located on a 43,050-square-foot cleared triangular lot. The site is not fenced, but the facility includes enclosed warehouse and manufacturing areas (see Figure 2-2). Areas of the property that are not paved or covered by buildings are grass covered. A portion of the facility building was originally part of a farm house prior to 1939 and incorporated into the facility. The present building covers approximately 20,400 square feet. Materials are stored inside the building, with the exceptions of liquid nitrogen and anhydrous ammonia which are stored in the fenced tank area at the southern corner of the building (Refs. 2, 3, 7).

As previously stated, two aboveground storage tanks are located in a small fenced area at the southern corner of the facility building. One tank contains anhydrous ammonia, and one contains liquid nitrogen. Both tanks are maintained by National Ammonia Company and registered with PADER. No spills or releases were reported by RWC personnel. (Refs. 3, 11).

A small parking area and steep driveway northeast of the building provide access to Susquehanna Road. The parking area and driveway are covered with asphalt and concrete. Allied Concrete and Scotch Paper maintain active facilities near the site across Susquehanna Road. Allied maintains a on-site well to provide process water. The well is not used to supply drinking water. Information concerning Scotch Paper's use of groundwater could not be obtained (Ref. 34). Railroad tracks bound the site to the south, and the Pennsylvania Turnpike overpass at Susquehanna Road bounds the site to the northwest. Selas Corporation, the subject of the 1989 site investigation, is located approximately 650 feet southwest and upgradient of the site. The nearest residence is located approximately 700 feet southeast of the site on Susquehanna Road (Refs. 1, 2, 3, 6).

Runoff is expected to follow site topography and enter several storm drains along Susquehanna Road. The storm drain discharges to an unnamed tributary of Sandy Run (Ref. 3).

2.3 OWNERSHIP HISTORY

The current owners of the property, Philip C. Keidel and Phyllis Wooler Keidel, purchased the site land from the Wooler family in February 1984. Robert Wooler, founder of RWC, purchased the property in 1938 from the Pennsylvania Railroad Company and incorporated portions of an abandoned farm house into the construction of the heat-treating facility. The Pennsylvania Railroad Company purchased the property from the Manor Real Estate and Trust Company in 1910. The Manor Real Estate and Trust Company obtained the current plot in parcels from two or more estates between 1893 and 1909 (Refs. 3, 7).

2.4 SITE USE HISTORY

RWC has been an active heat treatment facility since 1939. Prior to that, the Pennsylvania Railroad Company bought the land as a right-of-way for the railroad tracks south of the site. Although neither the age nor previous owners of the farm house are known, RWC personnel report that it once served as a toll house for Limekiln Pike. RWC is the only industrial facility known to have occupied the site (Refs. 3, 7).

2.5 PERMIT AND REGULATORY HISTORY

Currently, RWC maintains a license to operate two 7-microcurie dewpointers at the facility. The dewpointers are sometimes used to test heat-treated metals or materials to be heat treated (Refs. 8, 9). RWC first received Pennsylvania Radioactive Material License No. PA-431 from the Bureau of Radiation Protection on August 27, 1981. The 5-year license was last renewed by RWC on June 7, 1991 (Refs. 8, 9, 10, 12).

As previously stated, both aboveground storage tanks are maintained by the National Ammonia Company. PADER's division of Permits and Compliance notified the National Ammonia Company that the tanks are in compliance with Act 32, the Storage Tank and Spill Prevention Act on February 8, 1990 (Ref. 11).

RWC maintains three cascade systems (cooling towers) for its heat-treating processes. An algaecide, CGO-10-with Visigard, is added to the noncontact process water. According to Material Safety Data Sheets for this substance, it is toxic to fish and should be discharged only in small amounts. The manufacturer of the algaecide, Dubois Chemicals, flushed the system weekly until January 1992. This resulted in a discharge of water and algaecide to a storm sewer which discharged to the unnamed tributary of Sandy Run.

Upper Dublin Township reported a discharge to the Storm Sewers on Limekiln Pike to PADER in January 1992. PADER's inspection revealed green staining on the storm sewer, the discharge to the creek, and "a few hundred feet downstream of the discharge point" (Ref. 13). PADER issued a NOV to RWC as a result of the inspection and cited RWC for non-notification and illegal discharge. RWC was required to immediately cease discharging the substance (Ref. 15).

RWC plugged the discharge lines from the cooling tower on January 31, 1992. RWC contacted the Upper Dublin Township Sewer Department and Abington Wastewater Treatment Plant to secure permission to discharge to the sanitary sewer. An independent plumbing company was contracted to design and install piping from the cooling towers to the sanitary sewer.

Table 2-1 presents a chronological summary of events associated with the permit and regulatory history of the RWC site.

2.6 REMEDIAL ACTION TO DATE

The discharge line from the cooling tower to the storm sewer was rerouted to the sanitary sewer in early 1992. No other remedial action has been performed at RWC (Ref. 3).

Table 2-1

PERMIT AND REGULATORY HISTORY
ROBERT WOOLER COMPANY
DRESHER, PENNSYLVANIA

Date	Action
July 27, 1981	RWC applies to the Bureau of Radiation Protection for a Pennsylvania Radioactive Material License for two 7-microcurie dewpointers (Refs. 8, 9).
August 27, 1981	RWC receives Pennsylvania Radioactive Material License Number PA-431 from the Bureau of Radiation Protection (Ref. 8).
June 16, 1986	RWC applies to the Bureau of Radiation Protection to renew Pennsylvania Radioactive Materials License No. PA-431 (Ref. 10).
July 3, 1986	RWC receives renewal of Pennsylvania Radioactive Materials License No. PA-431 (Ref. 10).
February 8, 1990	PADER's Division of Permits and Compliance notifies the National Ammonia Co. that RWC's aboveground tanks are in compliance with Act 32, the Storage Tank and Spill Prevention Act (Ref. 11).
February 20, 1990	EPA identifies RWC as a potential hazardous waste site as a result of sampling associated with an SI at a nearby, upgradient site (Ref. 17).
May 22, 1991	RWC applies to the Bureau of Radiation Protection to renew Pennsylvania Radioactive Materials License No. PA-431 (Ref. 12).
June 7, 1991	RWC receives renewed Pennsylvania Radioactive Materials License No. PA-431 (Ref. 12).
January 31, 1992	PADER inspects RWC in response to a report by Upper Dublin Township of discharge to the storm sewers on Limekiln Pike. The inspection revealed green staining on the storm sewer, at the discharge to the creek, and downstream of the discharge. RWC was required to immediately cease the discharge (Refs. 13, 14).
February 18, 1992	PADER issues a Notice of Violation (NOV) to RWC as a result of the January 31, 1992 inspection. RWC officials are cited for non-notification and illegal discharge. PADER requests that a connection be made with the sanitary sewer, and no further discharge to the storm sewer be made (Ref. 15).

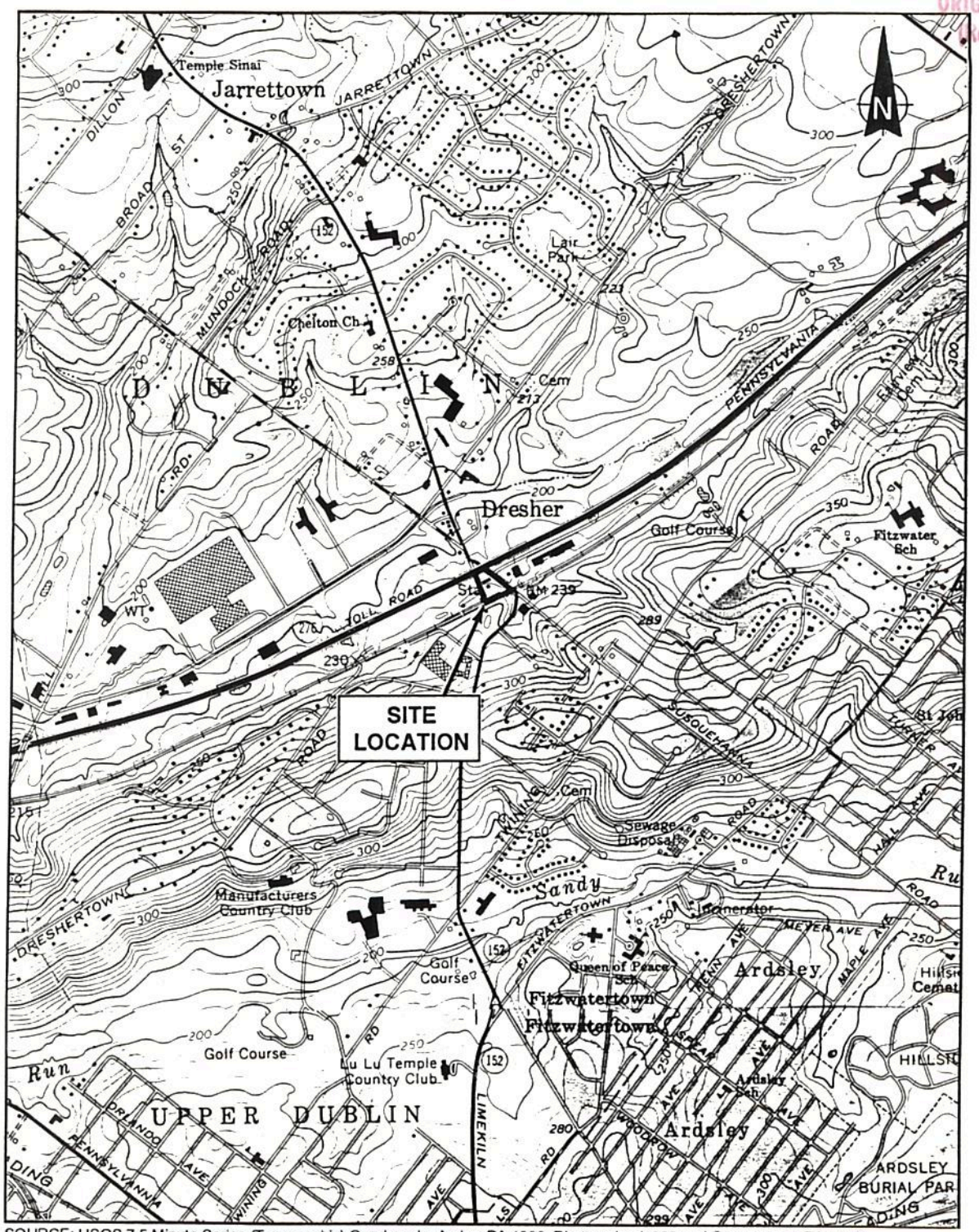
02[UZ]ZE5580:D4110/8020/27

Table 2-1 (Cont.)

Date	Action
February 28, 1992	RWC responds to PADER's NOV by stating that the discharge line from the cooling tower was plugged on January 31, 1992, and the weekly discharge was to be taken off site for disposal. RWC reportedly contacted Upper Dublin Township Sewer Department, and the Abington Wastewater Treatment Plant to secure permission to discharge to the sanitary sewer, and contracted an independent plumbing company to design and install the piping from the cooling towers to the sanitary sewer (Ref. 16).

02[UZ]ZE5580:D4110/8020/27

Source: Ecology and Environment, Inc. 1992.



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Amber PA 1966, Photorevised1983 and Germantown PA 1967.

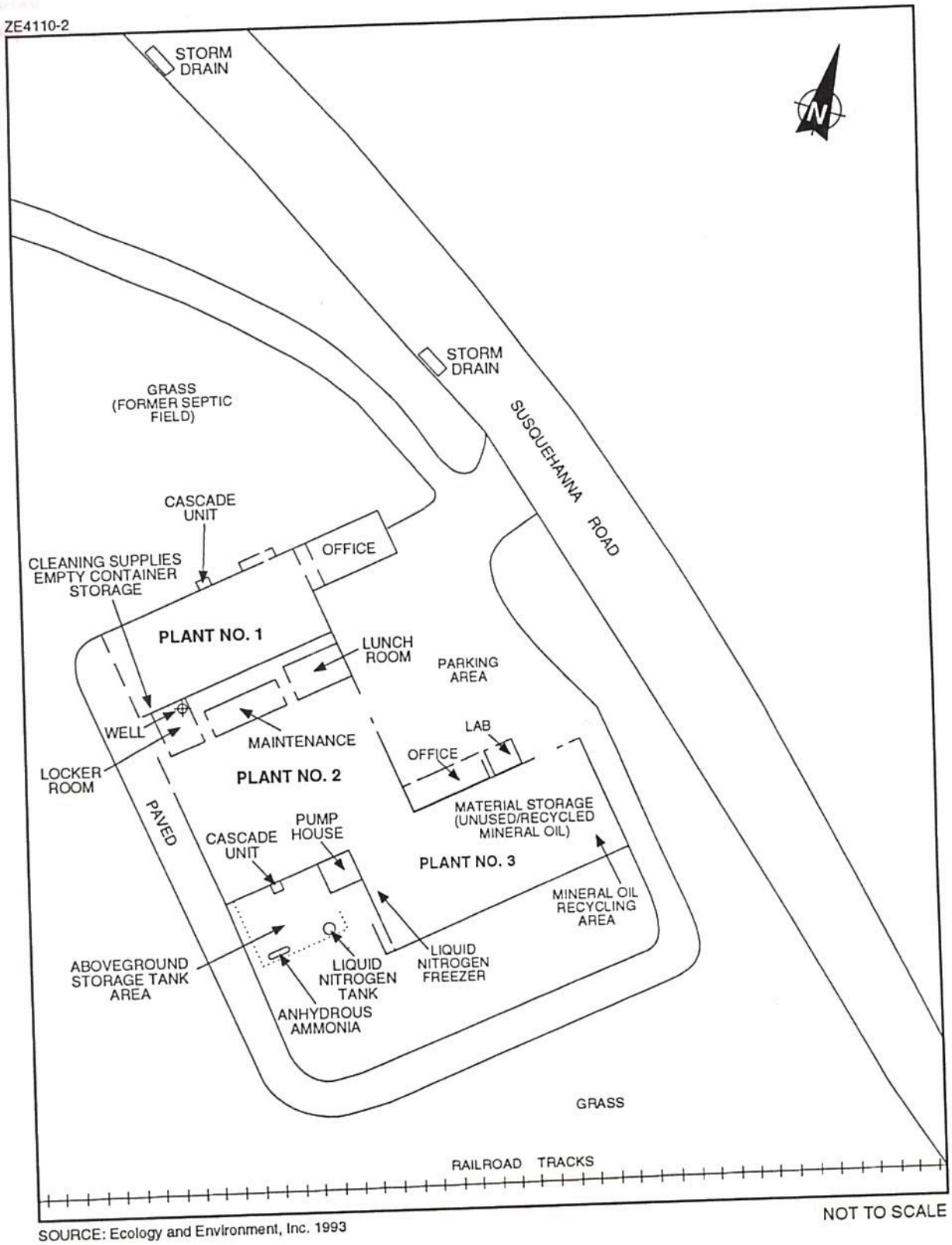
SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 2-1
SITE LOCATION MAP
ROBERT WOOLER COMPANY SITE
DRESHER, PENNSYLVANIA

ORIGINAL (Red)



SOURCE: Ecology and Environment, Inc. 1993

Figure 2-2
SITE SKETCH
ROBERT WOOLER COMPANY

3. ENVIRONMENTAL SETTING

3.1 WATER SUPPLY

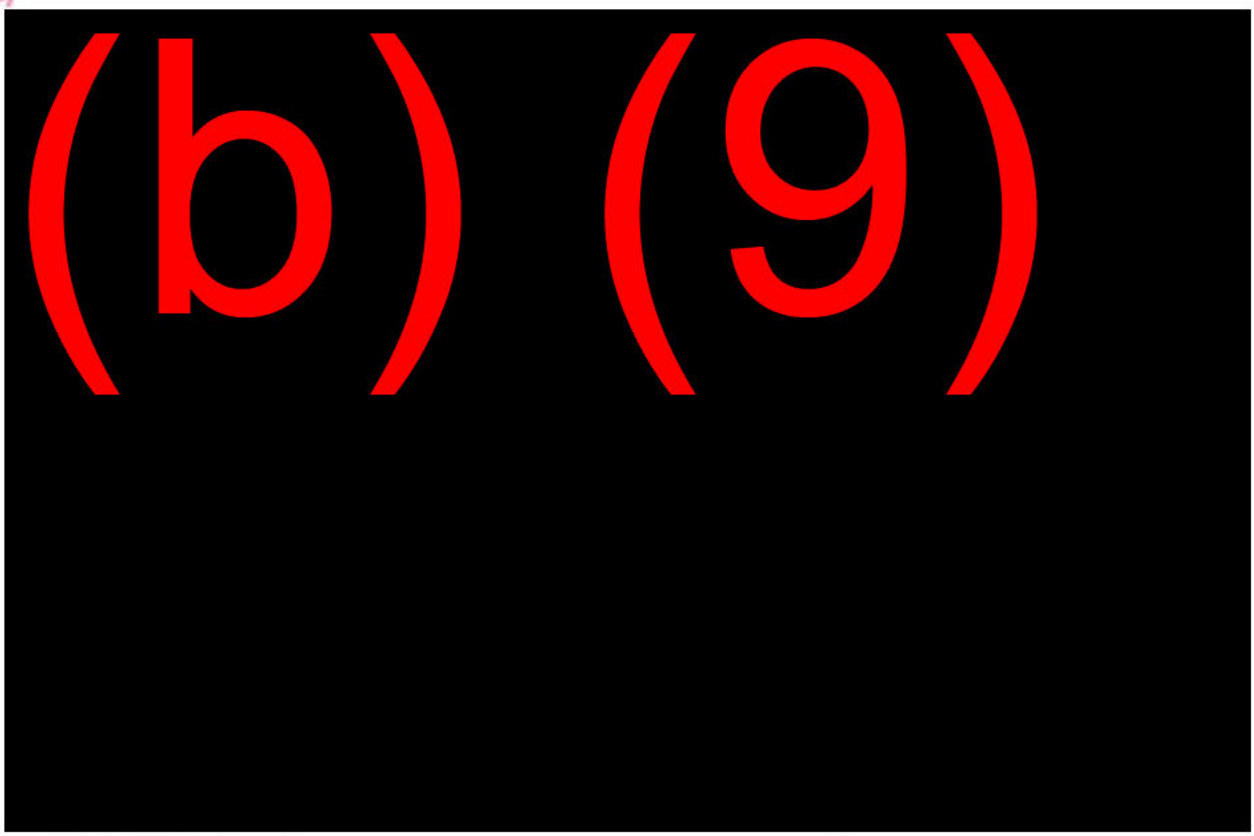
Residents within a 4-mile radius of the site rely on both groundwater and surface water from public and private sources for their potable water supply (see Figure 3-1). Thirty-one groundwater supply wells are located within a 4-mile radius of the site.

Philadelphia Suburban Water Company (PSWC) supplies water to the townships of Whitemarsh, Springfield, Cheltenham, Abington, Upper Dublin, Upper Moreland, and Lower Moreland, including the towns of Willow Grove, Ardsley, Oreland, Five Points, Whitemarsh, Glenside, and Dresher. PSWC obtains water from six surface locations, one reservoir, and 39 groundwater wells. The six surface intakes are on the Schuylkill River and Perkiomen Creek in Montgomery County, Pickering Creek in Chester County, Crum Creek in Delaware County, and the Neshaminy and Ironworks Creeks in Bucks County. All surface intakes are outside of the study area.

The Upper Merion Reservoir is a vertical, groundwater-fed reservoir located beyond a 4-mile radius of the site. The reservoir, a former rock quarry in the Ledger formation, is approximately 400 feet deep. Groundwater flows into the reservoir at a rate of eight million gallons per day (mgd). Intakes located on the Schuylkill River are more than 15 miles downstream of the site (Refs. 1, 6, 18).

Allied Concrete, located across Susquehanna Road from the site, maintains a well to supply contact water. The well does not supply drinking water. Similar information could not be obtained for Scotch Paper, also located near the site (Ref. 34).

ORIGINAL
(Red)



The North Wales Water Authority (NWWA) supplies water to approximately 50,000 persons in Upper Gwynedd, Lower Gwynedd, Whitpain, Upper Dublin, and Montgomery townships, including Jarrettown, Three Turns, and portions of Maple Glen and Rose Valley. NWWA utilizes 28 groundwater wells. Six NWWA wells are within the study area and have an average combined yield of 6.601 mgd. The well nearest to the site, well

gallons. NWWA purchases water from PSWC (one mgd), the Pennsylvania-American Water Company (1.5 mgd), and the Ambler Borough Water Department (0.3 mgd) (Refs. 1, 6, 18, 19).

The Horsham Township Authority (HTA) maintains 5,277 connections and serves approximately 17,663 persons in Horsham Township (Horsham and Maple Glen). HTA utilizes 14 groundwater wells, six of which are

located within the study area from (b) (9) of the site). All wells are completed in the Stockton formation. They range from 271 to 625 feet deep and have yields which range from 130 to 250 gallons per minute (gpm). Treatment consists of chlorination. HTA uses four storage tanks with a total storage capacity of 2.45 million gallons. HTA supplies water to the Hatboro Borough Water Authority (HBWA) (Refs. 1, 6, 19).

The Hatboro Borough Water Authority (HBWA) supplies water to approximately 19,000 persons in Hatboro Borough and small sections of Horsham and Lower Moreland townships. HBWA utilizes 16 wells, four of which are located (b) (9) of the site. All wells are completed in the Stockton formation. They have a total safe yield of 1.1 mgd and a maximum pumping capacity of 2.91 mgd. Water treatment consists of chlorination. HBWA has two storage tanks with a total storage capacity of 1.37 million gallons (Refs. 1, 6, 19).

The Ambler Borough Water Department (ABWD) supplies water to approximately 25,000 persons in Ambler and Fort Washington townships. ABWD utilizes nine deep groundwater wells, and all are located (b) (9) (b) (9) of the site. One shallow well located (b) (9) (b) (9) of the site is also utilized by ABWD. The deep wells are all completed in the Stockton formation, range from 290 to 500 feet deep, and have a capacity of 75 to 700 gpm. The Whitemarsh Spring well, completed in the Ledger formation, is 58 feet deep and has a capacity of 350 gpm. ABWD sells water to NWWA (Refs. 1, 6, 19).

The nearest identified domestic supply well is located approximately (b) (9) This well belongs to (b) (6) and is used for the potable supply (see Appendix D). This well and other wells located in a small development (b) (9) do not show up on the Pennsylvania Geologic Survey Water Well Inventory because they were drilled prior to 1966 (see Appendix E). However, the 1992 Montgomery County Planning Commission Existing Water Facilities map identifies the neighborhood as relying on domestic supply wells for potable water. All other areas in the site vicinity are served by public utilities (Refs. 1, 6, 19, 20).

ORIGINAL
(Red)

According to the County Planning Commission 1992 Existing Facilities Map, the only residential area not served by public utilities is located approximately (b) (9) of the site. A house-count was performed using the USGS Ambler quadrangle indicates approximately 25 homes in this area. Using the 2.58 persons per household multiplier for Montgomery County, it is estimated that 65 people utilize private wells for supply water (Ref. 6). It should be noted, however, that the Pennsylvania Geologic Survey Water Well Inventory indicates that private wells are sparsely scattered throughout the study area (see Appendix E). Since the inventory does not include wells drilled prior to 1966, it is believed that an accurate estimate cannot be obtained using the number of wells identified by the inventory for home well population figure. The summary given below is based on available information (Refs. 6, 19, 20, 32).

Distance From Site (miles)	Approximate Number of Wells	Approximate Number of Users
(b) (9)	1	0
	0	0
	25	65
	7	18
	0	0
	0	0
	0	0
TOTAL	33	83

3.2 SURFACE WATER

Drainage from the site flows downhill to enter storm sewers on Susquehanna Road. The storm sewer parallels Susquehanna Road and discharges to an unnamed tributary of Sandy Run located approximately 1,000 feet from the site. The tributary flows approximately 1.98 miles to its confluence with the perennial Sandy Run, and then flows north and west approximately 1.3 miles to its confluence with Wissahickon Creek. Wissahickon Creek is listed by Pennsylvania as a trout-stocked fishery, and a first priority scenic river (Refs. 1, 3, 6, 21, 22).

Wissahickon Creek flows approximately 11.5 miles south to its confluence with the Schuylkill River. The Schuylkill River is listed by Pennsylvania as a warm water fishery, as a habitat for migratory fishes, and as a first priority scenic river. The confluence of Wissahickon Creek and the Schuylkill River is approximately 15 downstream miles from the site (Refs. 1, 6, 21, 22, 23).

3.3 HYDROGEOLOGY

The geologic and hydrogeologic conditions in the study area were researched as part of the site inspection. A preliminary literature review was conducted to determine surface and subsurface geologic conditions, soil character, and the status of groundwater transport and storage.

3.3.1 Geology

RWC is located within the Triassic Lowlands section of the Piedmont physiographic province, at its border with the Piedmont Uplands section. The rocks of the Triassic Section are commonly known as the Newark group, a 16,000- to 20,000-foot section of nonmarine sedimentary rocks and associated intrusive and extrusive basic rocks. The Newark group was deposited in the Newark Basin, which was part of a rift system initiated by the widening of the Atlantic Basin and separation of the continents in Mesozoic time. The Piedmont Uplands section of the Piedmont physiographic province is present beneath the southern portion of the study area and consists of Precambrian- to Ordovician-age metamorphic and igneous rocks. The site area has a dendritic geomorphic drainage pattern and a topography of broad, shallow valleys and rolling hills (Refs. 1, 24, 25).

The structural history of the Newark Basin can be applied to all six Triassic rift valleys that stretch from Nova Scotia to North Carolina. These half-graben basins were created during the Palisade Disturbance. The Newark Basin lies unconformably upon a structural complex of lower Paleozoic quartzites/carbonates and Precambrian

granite/gneiss. It is bordered on the south-southwest by lower Paleozoic and Precambrian rocks of the Piedmont province. The shape and extent of the original depositional basin were very similar to the present form of the outcrop belt and closely follow the regional grain of Appalachian structures. Continuous downfaulting along the northwestern border has produced a regional dip of 10 to 20 degrees northwest (Refs. 1, 25).

The site is directly underlain by the Triassic-age Stockton formation. The Stockton formation consists of a lower conglomerate arkose member, a middle arkosic sandstone member, and an upper mudstone member. The lower yellow gray conglomerate deposits consist of relatively dispersed, moderately rounded clasts of quartz, quartzite, limestone, and feldspar. The clasts, averaging 1 inch in diameter, are set in a poorly sorted arkosic matrix. The middle sandstone member is a fine- to medium-grained, light yellowish-gray to pale reddish-brown, fairly well-sorted arkosic sandstone. The upper mudstone is reddish-brown in color and is feldspathic. The abundant feldspar in the Stockton formation implies a continuous supply from a soda-rich, metamorphosed Paleozoic source east and south of the Newark Basin. The erosion of these crystalline eastern and southern highlands spread Stockton sediments across the basin, forming extensive flood-plain deposits. Fossil fauna such as ferns, conifers, ginkos, mollusks, labyrinthodont amphibians, and phytosaur reptiles suggest an extensive fluvial and flood-plain paleoenvironment for the Stockton. The thickness of the formation reaches a maximum of 6,000 feet at the Montgomery-Bucks county line, approximately 4.6 miles northeast of the site) (Refs. 1, 25, 26, 28).

The Cambrian-age Chickies formation unconformably contacts the Stockton 0.1 mile south of the site, and consists of a thick-bedded, light gray to white, hard quartzite and quartz schist that is thin bedded in the upper part and locally disintegrates into a fine white siliceous clay. The basal Hellam Conglomerate member consists of a coarse cobble conglomerate composed of well-rounded cobbles (three to

six inches in diameter) and a milky white quartz pebbles (up to 0.5 inch in diameter) in a finer quartz matrix that firmly cements them. The formation contains fossil Scolithus tubes, a trace fossil formed by burrowing annelid worms. Their presence usually indicates a shelfal paleoenvironment. The thickness of the formation is approximately 400 feet (Refs. 1, 26, 28).

Discordant, basin-shaped sheets and cross-cutting dikes of diabase intruded the Newark group in late Triassic time; therefore, their stratigraphic position varies throughout the study area. A prominent dike of diabase is located 0.75 mile northwest of the site. The diabase rock is dark gray to black, dense, and a very fine grained and consists of 90 to 95 percent labradorite and augite. These olivine-poor diabase rocks are characteristic of rift valley sequences and were emplaced during episodes of tensional rifting associated with the opening and widening of the Atlantic Basin. The dikes are generally 5 to 100 feet thick, while the sheets are much thicker (Refs. 1, 26, 27, 28).

Stratigraphically younger than the Chickies formation and cropping out 0.7 mile south of the site is the Cambrian-age Ledger formation. The Ledger formation is a massive, very light gray to light gray, medium to coarsely crystalline, sparking dolomite. The formation is estimated to be 1,000 feet thick (Refs. 26, 28).

Stratigraphically older than the Chickies formation and cropping out 1,000 feet east of the site is the Precambrian-age pyroxene-bearing felsic gneiss. The felsic gneiss is light buff to light pink and fine to medium grained. It is composed of quartz, microcline, hornblende, and some biotite. The thickness of this unit is unknown (Refs. 26, 28).

Stratigraphically younger than the Stockton formation and cropping out throughout the study area, are the Pensauken and Bridgeton formations (undifferentiated). The stratigraphically younger of the two units, the Pensauken formation is a yellow to dark reddish-brown, extensively crossbedded, cemented sand. It contains interbedded coarse-grained gravels composed mostly of quartz, quartzite, and chert in addition to pebbles and cobbles of shale, sandstone, and crystalline

rocks eroded from Mesozoic- to Precambrian-age formations. The Bridgeton formation is a yellow, white, or irregularly stained reddish to orange brown, extensively crossbedded clayey sand. Locally, beds of gravel composed of vein quartz, chert, and quartzite are present. The presence of horizontal gravel beds, crossbedding in the sands, and lenses of gravel suggest a fluvial paleoenvironment for these formations. Both formations have a maximum thickness of 30 feet (Refs. 1, 26, 28).

Stratigraphically older than the Pensauken and Bridgeton formations and outcropping throughout the study area, is the Cretaceous-age Patapsco formation. The Patapsco formation is a red-, gray-, and chocolate-colored, variegated clay that is interbedded with sandy clay, light-colored sand, and gravelly sand. The formation can be up to 80 feet thick (Refs. 26, 28).

3.3.2 Soils

The site is underlain by a Made Land soil. This soil occurs as a result of altering and mixing soils formed in material weathered from shale and sandstone. This land type is mainly nearly level and gently sloping and is likely to be found on low-lying flats. The soil is a dusky-red to yellowish-brown shaly silt loam to channery sandy loam with some areas along the Schuylkill River consisting of gravelly silty clay loam mixed with shale. The soil has a moderate to very slow permeability (4.2×10^{-4} to 1.4×10^{-3} cm/sec), a moderate to very low available moisture capacity, and a pH range of very strongly acid to medium acid (4.5 to 6.0) (Ref. 29).

3.3.3 Groundwater

In the Stockton formation, the lower conglomerate member and the middle arkosic sandstone member contain both primary and secondary openings that provide a moderate to high total effective porosity and permeability. The middle arkosic sandstone has the highest average reported yield, 131 gallons per minute (gpm), and the highest average

specific capacity, 4.8 gpm per foot, of any of the formation members. The lower conglomerate member has an average specific capacity of 3.1 gpm per foot. The upper mudstone member is too finely grained to contain a sufficient permeability to permit easy circulation of groundwater. Most wells tapping this member obtain water chiefly from fractures and joints. This upper mudstone has an average reported yield of 19 gpm and an average specific capacity of 0.4 gpm/ft. There are no documented barriers to groundwater flow. All the formations in the study area are likely to be hydraulically interconnected through fractures and joints or in the limestones, by solution channels and fractures (Refs. 1, 24, 26, 27).

The Chickies formation has a very low porosity and a very low permeability. Eleven wells in Chester County have depths that range from 42 to 222 feet, with a median depth of 112 feet. Nine wells have a cased depth range of 13 to 60 feet, and a median cased depth of 22 feet. Two wells have a specific capacity of 0.2 gpm per foot, and yields for six wells range from 2 to 20 gpm, with a median yield of 12 gpm (Refs. 1, 24, 26, 27).

The diabase has a very low secondary porosity and a low permeability. Well yields in Montgomery County range from 0.3 to 35 gpm, with a median yield of 5 gpm. Diabase is a poor yielding aquifer. Wells generally obtain their yields from a depth of 50 feet or less, and the maximum depth from which a well in diabase is reported to obtain water is 125 feet. The average specific capacity is only a fraction of one gpm per foot. The reported yields of five wells range from 2 to 45 gpm and average 23 gpm (Refs. 1, 24, 26, 27).

The Ledger formation has a low to high porosity and a low to high permeability. Seven wells in Chester County have a depth range of 42 to 400 feet, with a median depth of 118 feet. Four wells have a cased depth range of 5 to 100 feet, with a median cased depth of 40 feet, and five wells have a yield range of 7 to 150 gpm, with a median yield of 25 gpm (Refs. 1, 24, 26, 27).

The Elbrook Limestone has a moderate porosity and a moderate to high permeability. Two wells in Chester County have a depth range of 85 to 200 feet. Two wells have a cased depth range of 50 to 100 feet and a yield range of 15 to 150 gpm (Refs. 1, 24, 26, 27).

The Conestoga formation has a low porosity and moderate to low permeability. In Chester County, 16 wells range in depth from 42 to 200 feet, with a median depth of 90 feet. Eight wells have a cased depth range of 18 to 134 feet, with a median case depth of 49 feet. Two wells have a specific capacity range of 0.1 to 0.4 gpm per foot, and nine wells have a yield range of 7 to 175 gpm with a median yield of 20 gpm (Refs. 1, 24, 26, 27).

Granitic gneiss within the study area has a very low porosity and low permeability. Median yields from this rock unit are typically 20 gpm (Refs. 1, 24, 26, 27).

The oligoclase-mica facies of the Wissahickon formation has a low porosity and low permeability. In Chester County, 115 wells range in depth from 48 to 400 feet, with a median depth of 112 feet. Sixty-seven wells have a cased depth range of 10 to 157 feet, with a median case depth of 40 feet. Twenty wells have a specific capacity range of 0.06 to 8.4 gpm per foot, with a median specific capacity of 0.4 gpm per foot, and 77 wells have a yield range of 0 to 50 gpm, with a median yield of 10.5 gpm (Refs. 1, 24, 26, 27).

The Pensauken and Bridgeton formations have a high porosity and a moderate to high permeability. The gravels are the main source of groundwater in these formations, even though they tend to be thin and irregularly distributed. Maximum reported yields from the Pensauken and Bridgeton formations range from 1,200 to 7,000 gpm (Refs. 1, 24, 26, 27).

The Patapsco formation has a moderate to high porosity and moderate to high permeability. Wells in the formation have yields that range from 12 to 500 gpm, with an average yield of 89 gpm (Refs. 1, 24, 26, 27).

There are more than 5 acres of wetlands within the study area. These wetlands are hydraulically interconnected to the shallow groundwater systems of the rock units that underlie them (Ref. 1).

3.4 CLIMATE AND METEOROLOGY

Climatological data was obtained for Philadelphia, Pennsylvania, based on the period from 1951 until 1980. The Philadelphia city limits are located approximately 10 miles south of the site. According to these data, the average annual temperature is 54.3°F. The coolest month is January, with a mean temperature of 31.2°F; the hottest month is July, with a mean temperature of 76.5°F (Refs. 1, 30)

The average annual precipitation is 41.42 inches. The month with highest precipitation is August, with 4.10 inches; the lowest is February, with 2.81 inches. The 2-year, 24-hour rainfall will produce 3.0 inches of rain. The mean annual lake evaporation for the area is 34.5 inches. Therefore, the net moisture gain is 6.92 inches.

The annual prevailing wind direction is from the west-southwest. Southwesterly winds prevail during the summer months, while northwesterly winds prevail during the winter. Destructive velocities are comparatively rare, and most gusts occur during summer thunderstorms (Refs. 1, 30).

3.5 LAND USE

RWC is located in heavily developed suburban Montgomery County. The areas surrounding the site consist largely of residential communities with commercial and industrial zones. Directly north and downslope of the site is an industrial park. A very small percentage of the surrounding lands remain unaltered. Golf courses are located 0.5 mile east and 1 mile southwest of the site. ConRail railroad tracks form the southern site boundary. The site is located outside the 500-year flood-plain (Refs. 1, 3, 6).

3.6 POPULATION DISTRIBUTION

A number of towns and communities in Montgomery County are located within the 4-mile radius study area. Population counts within radii identified on the 4-mile radius map are as follows:

Radius (miles)	Approximate Population
On site	40 (employees)
0 to 0.25 mile	40
0.25 to 0.5 mile	791
0.5 to 1 mile	1,585
1 to 2 miles	19,645
2 to 3 miles	26,845
3 to 4 miles	55,165
TOTAL	104,111

The intervals are taken as distances from the site, and the data presented for each interval are not cumulative. Population estimates are based on a house count identified on the 4-mile radius map where possible, and using a persons-per-household average of 2.58 for Montgomery County. For areas in which individual houses are not identified, the total population of each community was multiplied by the approximate fraction of community area occurring in the radius from the site (Refs. 1, 32).

The following communities occur wholly or partially within the study area, and they were considered when estimating population counts: Abington, Ambler, Ardsley, Arlingham, Baederwood, Cedarbrook, Dresher, Edge Hill, Enfield, Erdenham, Oreland, Fitzwatertown, Five Points, Flourtown, Fort Hill, Fort Washington, Glenside, Hatboro, Hill Crest, Horsham, Jenkintown, Laverock, Maple Glen, Rose Valley, Roslyn, Springfield, Sunnybrook, Three Runs, Weldon, Whitemarsh, Willow Grove, and Wyncote.

3.7 CRITICAL ENVIRONMENTS

According to information obtained from the United States Fish and Wildlife Service, two federally listed endangered birds are expected to

be found as transient species in the study area. They are the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus). There is no listed critical habitat for these species in the project area (Refs. 1, 31). The Pennsylvania Fish and Wildlife Data Base Endangered and Threatened Species List also lists the bald eagle and peregrine falcon, as well as the redbelly turtle (Chrysemys rubriventris) as a threatened species in Pennsylvania (Refs. 1, 31).

According to information obtained from the Pennsylvania Natural Diversity Inventory regarding species of special concern found within the subject study area, two species were noted within 15 miles downstream of the site. Water hemp ragweed (Amaranthus cannabinus), listed as rare in Pennsylvania, was last observed on September 22, 1982. Low showy aster (Aster spectabilis), listed as endangered in Pennsylvania, was last observed on September 9, 1983 (Ref. 1).

There are several wetlands greater than 5 acres located along the surface water pathway. The nearest of these is located along the unnamed tributary, near its confluence with the Sandy Run, approximately 1.6 miles west and slightly south of the site. It is approximately 18 acres of palustrine, broad-leaf deciduous forested, temporary wetland. This is the nearest wetland that receives drainage from the site (Refs. 6, 23).

Approximately 12 acres of palustrine, broad-leaf deciduous forested, temporary wetlands occurs along Sandy Run as it flows through Fort Washington State Park, located approximately 2.5 miles from the site. Ten acres of wetlands occur at the confluence of Sandy Run and Wissahickon Creek, approximately 3.0 miles from the site. Approximately 25 acres of wetlands occur along Wissahickon Creek between Sandy Run and the Schuylkill River.

Thirty-five acres of wetlands occur within a 1-mile radius of the site, none of which are expected to receive drainage from the site. However, these wetlands are expected to be hydrologically connected to the shallow aquifer. A summary of wetland frontage along the surface water migration pathway follows (distances are estimated from the probable point of entry [PPE]) (Ref. 23):

Stream Miles from PPE	Wetland Frontage (miles)
1.6	0.5
2.5	0.42
3.4	0.1
3.6	0.15
3.8	0.9
5.0	0.1
5.6	0.4
TOTAL	2.57 miles

4. WASTE TYPES AND QUANTITIES

The RWC well was sampled in 1989 as part of a nearby site investigation. It was found to be contaminated with 270 parts per billion (ppb) TCE, 22 ppb tetrachloroethene, 52 ppb 1,1,1-TCA, and 52 ppb 1,1-dichloroethene (See Appendix C). RWC utilized two TCE degreasing units from 1963 to 1985 which were maintained by Gold Shield, Inc. A Gold Shield manifest indicated that approximately 200 gallons of spent solvent (TCE) was removed per month and replaced with clean solvent. It is unclear, but unlikely, whether this volume remained constant throughout the period that degreasers were on site. No spills or releases of TCE are reported by RWC officials (Refs. 1, 3, 17).

Other on-site wastes, including municipal wastes, are removed regularly or recycled on site (mineral quenching oil) as needed. There are no areas specifically designated for waste accumulation besides the dumpsters outside the facility, the empty container storage area, and palate upon which drums of spent mineral oil are stored before recycling. No spills or releases are reported by RWC personnel (Ref. 3).

Currently, RWC discharges backflushed green algaecide from the cooling towers to the sanitary sewers weekly. According to the Abington Wastewater Treatment Facility, the quantity of discharge does not exceed the 350 gallon/month limit specified in RWC's wastewater permit.

5. FIELD TRIP REPORT

5.1 SITE RECONNAISSANCE

On November 5, 1992, Not Responsive Based on Revised Scope of E & E performed a site reconnaissance at the RWC site. They arrived at the site at 10:00 AM and were met by Robert Coyle, Vice President of Robert Wooler Company. A short interview was conducted. Also present were Philip Keidel, President of the company, and (b) (6), an employee. The inspection team was given a tour of the facility.

Robert Wooler Co. personnel are on site 24 hours in three shifts. All doors appeared sound and could be locked. No readings above background were registered on site entry equipment including an organic vapor analyzer (OVA) and a radiation meter (Rad-mini) (Refs. 2,3).

The inspection team visited the Abington Township Wastewater Treatment Plant to inquire about discharge from the site. A short interview was conducted and (b) (6) Superintendent, provided copies of pertinent documents. The inspection team proceeded to the County Courthouse in Norristown to obtain information concerning the site from the County Planning Commission, the Tax Assessor's Office, and the Recorder of the Deeds' Office.

5.2 PERSONAL INTERVIEWS

Robert M. Coyle
Vice President
Robert Wooler Company
P.O. Box 300
Dresher, PA 19025-0300
(215) 542-7600

Philip C. Keidel, Jr.
President
Robert Wooler company
P.O. Box 300
Dresher, PA 19025-0300
(215) 542-7600

(b) (6)
Superintendent
Township of Abington Wastewater Treatment Plant
1000 Fitzwatertown Road
Roslyn, PA 19001
(215) 884-8329

(b) (6)
Senior Planner
Montgomery County Planning Commission
Courthouse
Norristown, PA 19404-0311
(215) 278-3733

6. REFERENCES

1. NUS Corporation, February 13, 1990, FIT 3 Site Inspection of Selas Corporation of America.

2. Ecology and Environment, Inc. (E & E), November 5, 1992, Trip Report, Robert Wooler Co., Philadelphia, Pennsylvania.

3. Ecology and Environment, Inc., November 5, 1992, Robert Wooler Co., Preliminary Assessment Site Visit Logbook.

4. Robert Wooler Company, 1992, Promotional Brochure.

5. Montgomery County Planning Commission, Land Use Plan for Montgomery County 1983.

6. USGS 7.5 Minute Series Topographic Map for Ambler, Pennsylvania 1966, photorevised 1983; Germantown, Pennsylvania 1967, photorevised 1983; Frankford, Pennsylvania 1967, photorevised 1983; Hatboro, Pennsylvania 1966, photorevised 1983.

7. Montgomery County Board of Assessments, November 5, 1992, Property Ownership printout for 1755 Susquehanna Road.

8. Burtsavage, Edward Sr., August 27, 1981, personal communication, Bureau of Radiation Protection, letter to R. Coyle, Robert Wooler Co.

9. Robert Wooler Company (RWC), July 27, 1981, Application for Radioactive Material License.

10. Levin, Stuart, July 3, 1986, personal communication, Bureau of Radiation Protection, letter to Gary Fougeray, Robert Wooler Company.

11. Luchie, Lewis, Pennsylvania Department of Environmental Resources (PADER), Division of Permits and Compliance, February 8, 1990, letter to National Ammonia Co.

12. Levin, Stuart, June 7, 1991, Bureau of Radiation Protection (BRP), letter to Gary Fougeray, Robert Wooler Co.

13. PADER, Bureau of Water Quality Management, January 31, 1992, General Inspection Report for Robert Wooler Co.

14. DuBois Chemicals, Inc., October 11, 1990, GCO-10/GCO-10 with Visigard Discharge Information Sheet.

15. Pennsylvania Department of Environmental Resources (PADER), Bureau of Water Quality Management, February 18, 1992, Notice of Violation Letter to Robert Coyle, Robert Wooler Co.

16. Robert Wooler Co., February 28, 1992, letter to PADER, Water Quality Management (Response to Notice of Violation).

17. United States Environmental Protection Agency (EPA), February 20, 1990, Potential Hazardous Waste Site Identification, prepared by Lynnette Elser.

18. Philadelphia Suburban Water Company, April 1987, Water, Our Most Precious Resource.

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22. Pennsylvania Department of Environmental Resources (PADER), August 1991, Pennsylvania Code, Title 25: Environmental Resources Chapter 93, Water Quality Standards.

23. U.S. Department of the Interior, Fish and Wildlife Service, April 1981, National Wetlands Inventory maps for Ambler, Pennsylvania and Germantown, Pennsylvania.

24. Pennsylvania Department of Environmental Resources (PADER), Bureau of Topographic and Geologic Survey, 1971, Water Resource Report No. 29, Groundwater Resources of Montgomery County, Pennsylvania.

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26. Pennsylvania Department of Environmental Resources (PADER), Bureau of Topographic and Geologic Survey, 1982, Environmental Geology Report No. 1, Engineering Characteristics of the Rocks of Pennsylvania.

27. Hall, George M., 1934, Groundwater in Southeastern Pennsylvania, Pennsylvania Geologic Survey, Groundwater Resource Report No. 2, reprinted 1973.

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29. U.S. Department of Agriculture, Soil Conservation Service, April 1967, Soil Survey of Montgomery County, Pennsylvania.

30. National Oceanic and Atmospheric Administration, 1979, Annual Summary with Comparative Data, Philadelphia, Pennsylvania, Climatography of the United States, Local Climatological Data, National Climatic Data Center, Asheville, North Carolina.

31. Pennsylvania Fish and Wildlife, November 13, 1992, Data Base List A: Endangered and Threatened Species, Ambler Quadrangle.

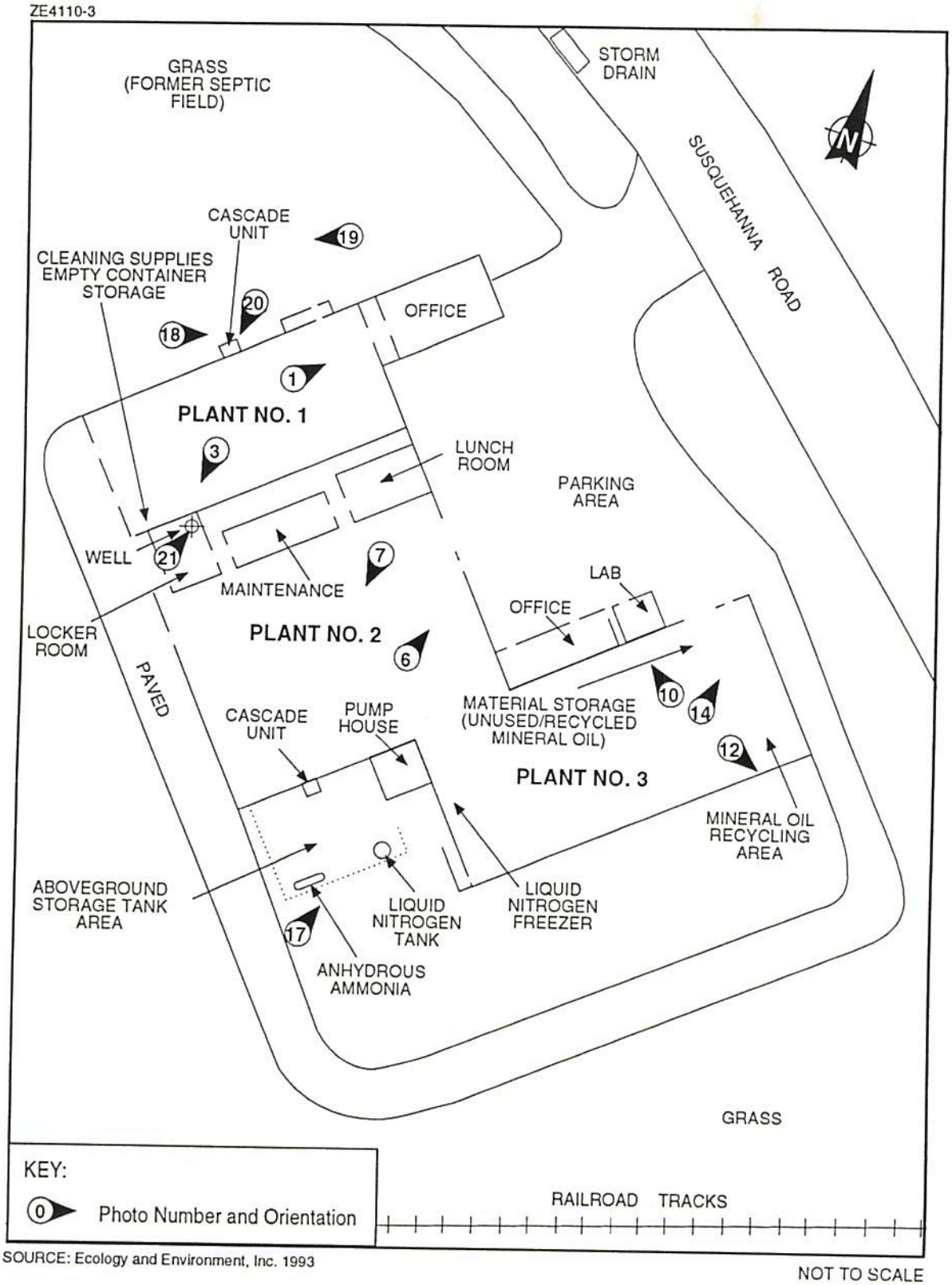
32. U.S. Department of Commerce, Bureau of the Census, August 1991, 1990 Census of Population and Housing, Summary Population and Housing Characteristics, Pennsylvania.

33. Federal Emergency Management Agency, January 16, 1992, Flood Insurance Study: Township of Upper Dublin, Montgomery County,

34. Allied Concrete Co., February 1993, letter from (b) (6) to [redacted] of E & E.

APPENDIX A

PHOTO LOG



SOURCE: Ecology and Environment, Inc. 1993

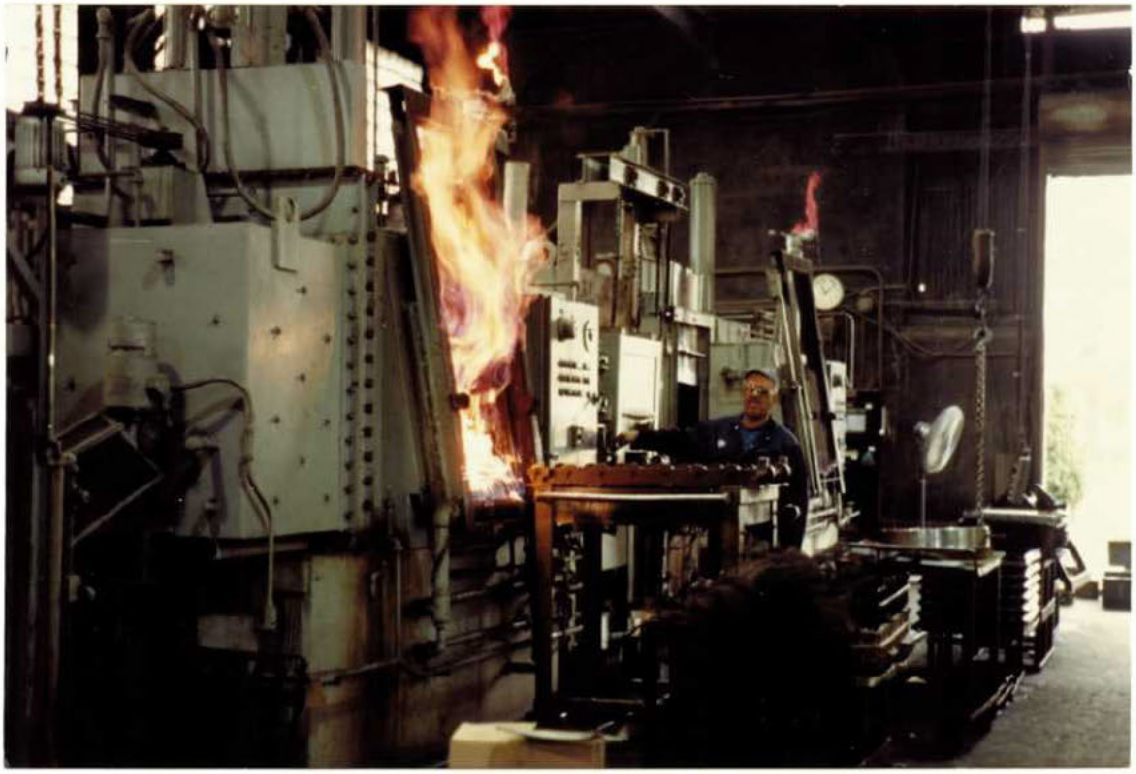
NOT TO SCALE

Figure A-1
PHOTO LOCATION MAP
ROBERT WOOLER COMPANY

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:10 Frame No.: 1
	Comments*: View of AF-3 and AF-5 furnace lines inside plant No. 1.
	*Comments to include location.



ORIGINAL

ecology and environment, inc.
PHOTOGRAPHIC RECORD

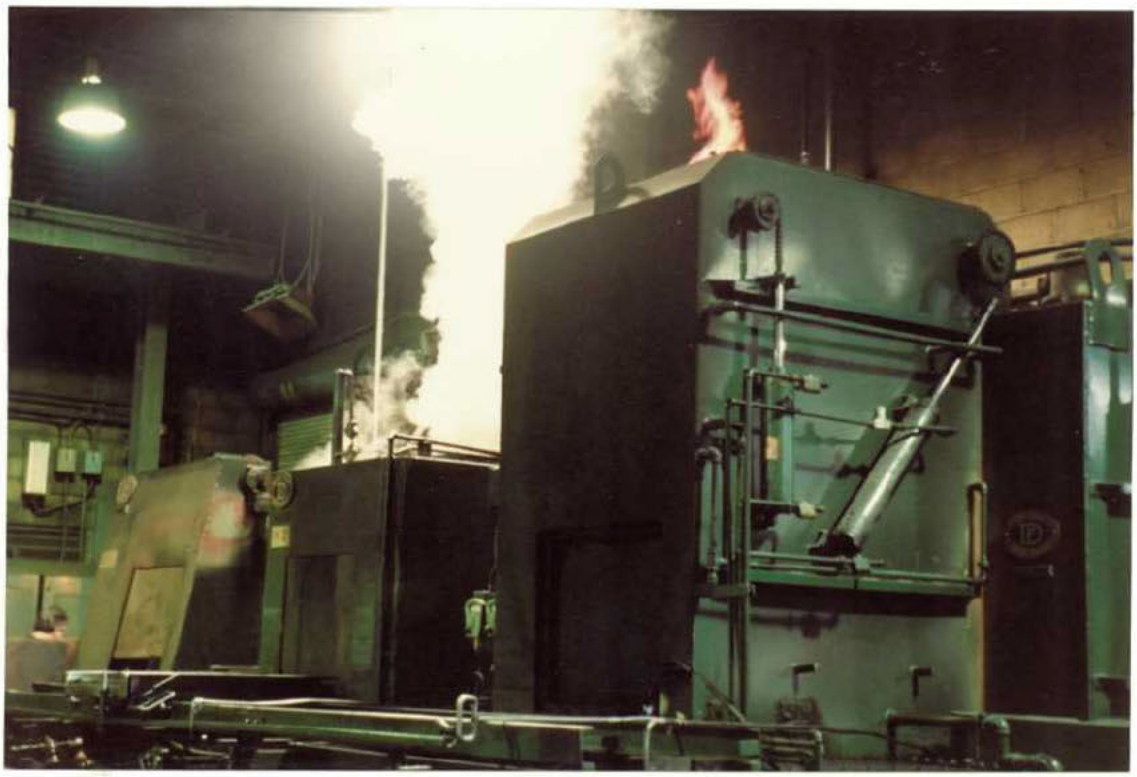
Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:15 Frame No.: 3
	Comments*: View of empty container storage area inside plant No. 1.
	*Comments to include location.

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:20 Frame No.: 6
	Comments*: View of AF-4 furnace line inside plant No. 2

*Comments to include location.



A-9

02:ZE5580_D4110-PHOTO-12/30/92-D1

ORIGINAL

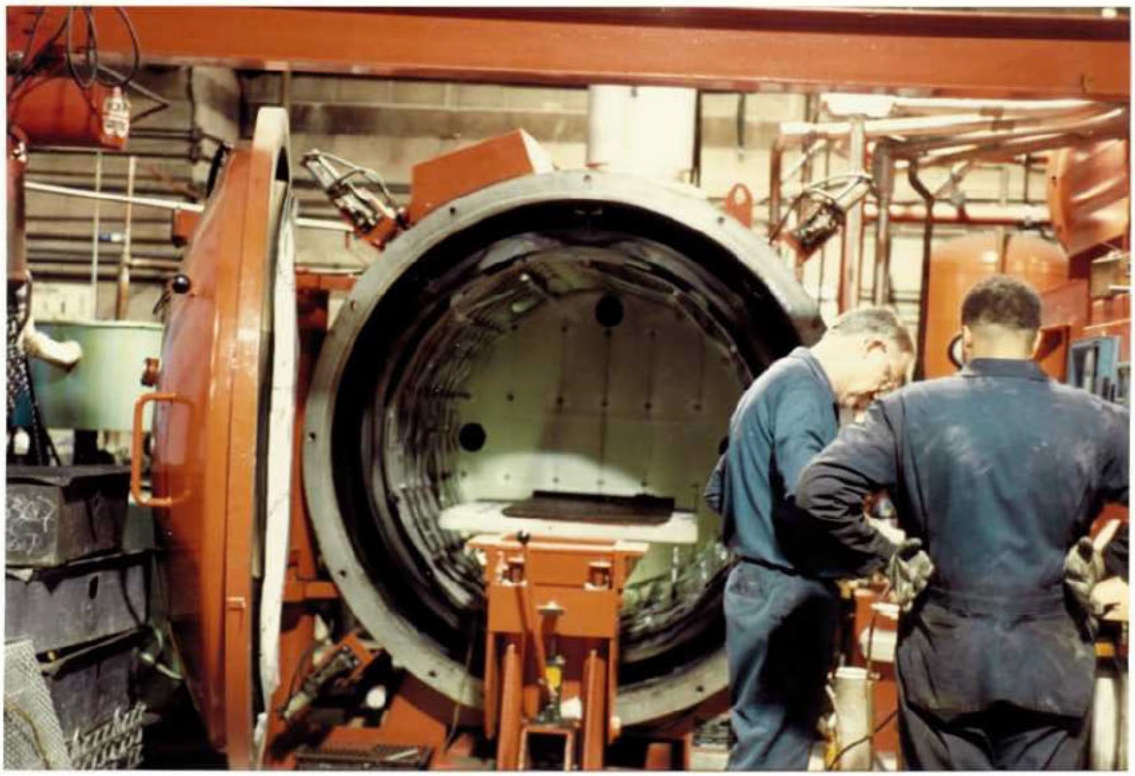
ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:20 Frame No.: 7
	Comments*: View of shaker unit located inside plant No. 2.
	*Comments to include location.

ORIGINAL

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:25 Frame No.: 10
	Comments*: View of vacuum unit located inside facility.
	*Comments to include location.



ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:30 Frame No.: 12
	Comments*: View of mineral oil recycling area located inside building.
	*Comments to include location.

ORIGINAL (Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] (Not Responsive Based on Revised Scop) Date: 11/05/92
	Time: 11:30 Frame No.: 14
	Comments*: View of material storage area (mineral oil for quenching) located inside facility.

*Comments to include location.

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:45 Frame No.: 17
	Comments*: View of anhydrous ammonia and liquid nitrogen tanks, with Niagara cascade unit in background. Tanks are located on the south corner of the building.

*Comments to include location.

ORIGINAL (Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:50 Frame No.: 18
	Comments*: View of Niagara cascade unit and reservoir shed located on northwest wall of facility.

*Comments to include location.

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:50 Frame No.: 19
	Comments*: View along northwest wall of building showing connection to sewer, Niagara cascade, reservoir shed, and former septic field.
	*Comments to include location.

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 11:55 Frame No.: 20
	Comments*: View of reservoir for process water
	located inside a shed on the northwest side of building.

*Comments to include location.

ORIGINAL
(Red)

ecology and environment, inc.
PHOTOGRAPHIC RECORD

Client: USEPA Region III	E & E Job No.: ZE5580
Site: Robert Wooler Company	
Camera: Make Pentax	SN 4759340 (EPA Decal 897603)
Lens Type 50 mm	SN 3687638
	Photographer: [redacted] Date: 11/05/92
	Time: 12:00 Frame No.: 21
	Comments*: View of Robert Wooler Co. non-contact process water supply well inside employee locker room.
	*Comments to include location.

02:ZE5580_D4110-PHOTO-12/30/92-D1

APPENDIX B

EPA PRELIMINARY ASSESSMENT FORM

ORIGINAL (Red)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 1 - SITE LOCATION AND ASSESSMENT

I. IDENTIFICATION

01 State	02 Site Number
PA	PAD987279387

II. SITE NAME AND LOCATION

01 Site Name (legal, common, or descriptive name of site)	02 Street, Route No., or specific location identifier				
Robert Wooler Company	1755 Susquehanna Road				
03 City	**04 State**	**05 Zip Code**	**06 County**	**07 County Code**	**08 Cong. Dist.**
Dresher	PA	19025	Mont-gomery	091	17

09 Coordinates	Latitude	Longitude
	40° 08' 23" . N	75° 09' 57" . W

10 Directions to Site (starting from nearest public road)
The site is located at the intersection of Susquehanna Road and Limekiln Pike, partially beneath the PA Turnpike overpass.

III. RESPONSIBLE PARTIES

01 Owner (if known)	02 Street (Business, mailing, residential)		
Philip C. and Phyllis Wooler Keidel	1755 Susquehanna Road		
03 City	**04 State**	**06 Zip Code**	**08 Telephone Number**
Dresher	PA	19025	(215) 542-7600
07 Operator (if known and different from owner)	**08 Street (Business, mailing, residential)**		
09 City	**10 State**	**11 Zip Code**	**12 Telephone Number**
			0

13 Type of Ownership (check one)
[X] A. Private [] B. Federal _____ (agency name) [] C. State [] D. County [] E. Municipal
[] F. Other _____ (specify) [] G. Unknown

14 Owner/Operator Notification on File (Check all that apply)
[] A. RCRA 3001 Date Received / / (Month Day Year) [] B. Uncontrolled Waste Site (CERCLA 103c) Date Received / / (Month Day Year) [X] C. None

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 On-Site Inspection
[X] Yes Date 11 / 05 / 92 (Month Day Year)
[] No

By (check all that apply)
[] A. EPA [X] B. EPA Contractor [] C. State [] D. Other Contractor
[] E. Local Health Official [] F. Other _____ (specify)

Contractor Name(s) _____

02 Site Status (check one)	03 Years of Operation	
[X] A. Active [] B. Inactive [] C. Unknown	1939 (Beginning Year)	Active (Ending Year)
	[] Unknown	

04 Description of Substances Possibly Present Known or Alleged
On-site well contaminated with TCE. Facility used TCE degreasers from 1963 to 1985.

05 Description of Potential Hazard to Environment and/or Population
Observed release to groundwater.

V. PRIORITY ASSESSMENT

01 Priority for Inspection (Check one. If high or medium is checked, complete Part 2-Waste Information and Part 3-Description of Hazardous Conditions and Incidents.)
[] A. High (Inspection required promptly) [] B. Medium (Inspection required) [] C. Low (Inspect on time available basis) [] D. None (No further action needed - complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)	03 Telephone Number
Not Responsive Based on Revise	Ecology and Environment, Inc.	(215) 546-9901

04 Person Responsible for Assessment	05 Agency	06 Organization	07 Telephone Number	08 Date
Mike Giuranna	EPA		(215) 597-3165	11 / 15 / 92 (Month Day Year)

EPA FORM 2070-12(7-81)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
PA	PAD987279387

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (check all that apply)

- [] A. Solid
- [] B. Powder, Fines
- [] C. Sludge
- [] D. Other _____
- [] E. Slurry
- [X] F. Liquid
- [] G. Gas

02 Waste Quantity at Site (measures of waste quantities must be independent)

Tons _____
Cubic Yards _____
No. of Drums _____

03 Waste Characteristics (check all that apply)

- [X] A. Toxic
- [] B. Corrosive
- [] C. Radioactive
- [] D. Persistent
- [] E. Soluble
- [] F. Infectious
- [] G. Flammable
- [] H. Ignitable
- [X] I. Highly volatile
- [] J. Explosive
- [] K. Reactive
- [] L. Incompatible
- [] M. Not applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			
OLW	Oily waste			
SOL	Solvents	Unknown		TCE on-site from 1963 to 1985.
PSD	Pesticides			
OOC	Other organic chemicals			
IOC	Inorganic chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy metals			

IV. HAZARDOUS SUBSTANCES (see Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure of Concentration
SOL	Trichloroethylene	79-01-6	Unknown	270 ppb	

V. FEEDSTOCKS (see Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (cite specific references, e.g., state files, sample analysis, reports)

NUS Corporation, Fit 3, February 1990, Site Inspection of Selas Corporation of America, Wayne, Pennsylvania.

ORIGINAL (Red)

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS	I. IDENTIFICATION	
	01 State PA	02 Site Number PAD987279387

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Groundwater Contamination
03 Population Potentially Affected 104, 111 within 4 miles
02 [X] Observed (date February 1990)
04 Narrative Description:
[] Potential [] Alleged

The Robert Wooler Co. well was found to be contaminated during a site investigation conducted at an upgradient site located approximately 650 feet southwest of Robert Wooler Company.

01 [] B. Surface Water Contamination
03 Population Potentially Affected 104,111 within 4 miles
02 [X] Observed (date January 1992)
04 Narrative Description:
[] Potential [] Alleged

Robert Wooler Co. was discharging algaecide to surface water. PADER issued a Notice of Violation in February 1992, and discharge ceased.

01 [] C. Contamination of Air
03 Population Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

01 [] D. Fire/Explosive Conditions
03 Population Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

01 [] E. Direct Contact
03 Population Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

01 [X] F. Contamination of Soil
03 Area Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

01 [X] G. Drinking Water Contamination
03 Population Potentially Affected 104,111 within 4 miles
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

Groundwater is utilized as supply water within 4 miles of the site.

01 [] H. Worker Exposure/Injury
03 Workers Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

01 [] I. Population Exposure/Injury
03 Population Potentially Affected _____
02 [] Observed (date _____)
04 Narrative Description:
[] Potential [] Alleged

N/A

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State: PA

02 Site Number: PAD987279387

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [X] J. Damage to Flora — 02 [] Observed (date _____) — [X] Potential — [] Alleged
04 Narrative Description:

Potential damage to flora along surface water migration pathway due to algaecide discharge.

01 [X] K. Damage to Fauna — 02 [] Observed (date _____) — [X] Potential — [] Alleged
04 Narrative Description:

Potential damage to fish in the surface water migration pathway due to algaecide discharge. Algaecide reported to be toxic to fish.

01 [] L. Contamination of Food Chain — 02 [] Observed (date _____) — [] Potential — [] Alleged
04 Narrative Description:

N/A

01 [X] M. Unstable Containment of Wastes (spills/runoff/standing liquids, leaking drums) — 02 [X] Observed (date January 1992) — [] Potential — [] Alleged
03 Population Potentially Affected: 104,111 within 4 miles
04 Narrative Description:

Illegal discharge of algaecide observed by PADER Water Quality Division. Discharge was discontinued at that time.

01 [] N. Damage to Off-site Property — 02 [] Observed (date _____) — [] Potential — [] Alleged
04 Narrative Description:

N/A

01 [X] O. Contamination of Sewers, Storm Drains, WWTPs — 02 [X] Observed (date January 1992) — [] Potential — [] Alleged
04 Narrative Description:

Discharge of algaecide entered storm sewers and discharged to surface water. Discharge was discontinued in January 1992.

01 [] P. Illegal/Unauthorized Dumping — 02 [] Observed (date _____) — [] Potential — [] Alleged
04 Narrative Description:

N/A

05 Description of Any Other Known, Potential, or Alleged Hazards

Potential discharge of TCE to abandoned septic system on site.

III. TOTAL POPULATION POTENTIALLY AFFECTED 104,111 people within study area.

IV. COMMENTS

V. SOURCES OF INFORMATION (cite specific references, e.g., state files, sample analysis, reports)

NUS Corporation, Fit 3, February 1990, Site Inspection of Selas Corp. of America, Wayne, Pennsylvania.

APPENDIX C

ANALYTICAL DATA AND MSDS SHEETS

ORIGINAL
(Red)

JUNKINS ENGINEERING
Water ● Wastewater ● Hazardous Waste ● RTK/SARA Compliance

LETTER OF TRANSMITTAL

200 Bethlehem Drive, Suite 205
P.O. Box 368
Morgantown, PA 19543-0368
(215) 286-2825

DATE 1/31/92 JOB NO. 8925
ATTENTION: [redacted] Not Responsive Based on Revised Scope
RE: Stormwater Sampling

WE ARE SENDING YOU (✓) Attached ( ) Under separate cover via _____ the following items:
( ) Shop drawings ( ) Prints ( ) Plans ( ) Samples ( ) Specifications
( ) Copy of letter ( ) Change order ( ) _____

COPIES	DATE	NO.	DESCRIPTION
1	1/14/92		Analysis Report and Chain of Custody Papers

THESE ARE TRANSMITTED AS CHECKED BELOW:
( ) For approval ( ) Approved as submitted ( ) Resubmit ___ copies for approval
(✓) For your use ( ) Approved as noted ( ) Submit ___ copies for distribution
( ) As requested ( ) Returned for Corrections ( ) Return ___ corrected prints
( ) For review and comment ( ) _____
( ) FOR BIDS DUE _____ 19 _____ ( ) PRINTS RETURNED AFTER LOAN TO US

REMARKS: [redacted] Not Responsive Based on Revised Scope These results are the best we have seen for any of our sampling sites. We will keep you posted on the progression of the permit application. You will receive a copy of the materials and methods section regarding your particular site, as soon as I have time to formally write it up.. HA HA HA...

COPY TO: _____

SIGNED: [redacted] Not Responsive Based on Revised Scope

BCM Laboratory Division
1850 Gravers Road
Norristown, PA 19401
(215) 275-0281

INAL REPORT
his is a final report.
he results have been checked and authorized for release.

CLIENT

JUNKINS ENGINEERING
ATTN: [redacted]
P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

BCM Sample #: 131645
Location : COMP
Client ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

Test Description	Results	Units	Test Method
Biochemical Oxygen Demand by [redacted] on 09/26/91 Biochemical Oxygen Demand (BOD)	< 6	mg/l	EPA # 405.1
Chemical Oxygen Demand by [redacted] on 10/08/91 Chemical Oxygen Demand (COD)	36.6	mg/l	EPA # 410.4
Nitrogen, Ammonia by [redacted] on 10/13/91 Nitrogen, Ammonia	< 0.1	mg/l	EPA # 350.(2-3)
Nitrite as N by [redacted] on 09/30/91 Nitrite as N	< 0.05	mg/l	EPA # 353.2
Nitrate as N by [redacted] on 09/30/91 Nitrate as N	1.20	mg/l	EPA # 353.2
Suspended Solids by [redacted] on 09/28/91 Total Suspended Solids (TSS)	83	mg/l	EPA # 160.2
Nitrogen, Total Kjeldahl by [redacted] on 10/07/91 Total Kjeldahl Nitrogen (TKN)	0.806	mg/l	EPA # 351.2
Phosphate, Total as P by [redacted] on 10/07/91 Phosphate, Total as P	0.509	mg/l	EPA # 365.1
Aluminum by [redacted] on 10/10/91 Aluminum	2.91	mg/l	EPA # 200.7
Cadmium by [redacted] on 10/10/91 Cadmium	< 0.005	mg/l	EPA # 200.7
Hexavalent Chromium as Cr by [redacted] on 09/26/91			EPA # 218.4

BCM Laboratory Division
1850 Gravers Road
Norristown, PA 19401
(215) 275-0281

ORIGINAL (Red)

FIN.. REPORT
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[redacted] CLIENT

JUNKINS ENGINEERING
ATTN: [redacted]
P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

BCM Sample #: 131645
Location : COMP
Client ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

Test Description	Results	Units	Test Method
Hexavalent Chromium	< 0.01	mg/l	
opper by [redacted] on 10/10/91 Copper	0.038	mg/l	EPA # 200.7
ro y [redacted] on 10/10/91 L..	4.03	mg/l	EPA # 200.7
ercury by [redacted] on 10/16/91 Mercury	0.0002	mg/l	EPA # 245.1
ercury Digestion by [redacted] on 10/16/91 M cury Digestion	10/16/91	M/D/Y	EPA # 245.1
etal Digestion (No Charge) by [redacted] on 10/03/91 Metal Digestion	10/03/91	M/D/Y	EPA - METALS
etal Digestion, Furnace by [redacted] on 09/30/91 Metal Digestion	09/30/91	M/D/Y	EPA - METALS
ckel by [redacted] on 10/10/91 Nickel	< 0.04	mg/l	EPA # 200.7
ad (Graphite Analysis) by [redacted] on 10/10/91 Lead	0.022	mg/l	EPA # 239.2
nc by [redacted] on 10/10/91 Zinc	0.054	mg/l	EPA # 200.7

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ie results have been checked and authorized for release.

[redacted] CLIENT

JUNKINS ENGINEERING
ATTN: [redacted]
P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

:M Sample #: 131646
ocation : GRAB
lient ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

est Description	Results	Units	Test Method
iochemical Oxygen Demand by [redacted] on 09/26/91			EPA # 405.1
Biochemical Oxygen Demand (BOD)	< 6	mg/l	
yanide by M A OWENS on 10/04/91			EPA # 335.3
Cyanide	< 0.002	mg/l	
hemical Oxygen Demand by [redacted] on 10/08/91			EPA # 410.4
Chemical Oxygen Demand (COD)	103	mg/l	
yanide Distillation by [redacted] on 10/02/91			EPA # 335.2
Date Distilled	10/2/91	M/D/Y	
itrogen, Ammonia by [redacted] on 10/13/91			EPA # 350.(2-3)
Nitrogen, Ammonia	0.13	mg/l	
itrite as N by [redacted] on 09/30/91			EPA # 353.2
Nitrite as N	< 0.05	mg/l	
litrate as N by [redacted] on 09/30/91			EPA # 353.2
Nitrate as N	0.367	mg/l	
)il & Grease (Fr. Extractables) by [redacted] on 09/27/91			EPA # 413.1
Oil & Grease	< 5	mg/l	
)H by [redacted] on 09/26/91			EPA # 150.1
pH-Laboratory	8.20	Std.Un	
Suspended Solids by [redacted] on 09/28/91			EPA # 160.2
Total Suspended Solids (TSS)	179	mg/l	
Nitrogen, Total Kjeldahl by [redacted] on 10/07/91			EPA # 351.2

BCM Laboratory Division
1850 Gravers Road
Norristown, PA 19401
(215) 275-0281

ORIGINAL (Red)

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P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

BCM Sample #: 131646
Location : GRAB
Client ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

Test Description	Results	Units	Test Method
Total Kjeldahl Nitrogen (TKN)	1.80	mg/l	
hosphate, Total as P by [redacted] on 10/07/91 Phosphate, Total as P	0.787	mg/l	EPA # 365.1
lum um by [redacted] on 10/10/91 A inum	2.87	mg/l	EPA # 200.7
admium by [redacted] on 10/10/91 Cadmium	< 0.005	mg/l	EPA # 200.7
exavalent Chromium as Cr by [redacted] on 09/26/91 He avalent Chromium	< 0.01	mg/l	EPA # 218.4
opper by [redacted] on 10/10/91 Copper	0.086	mg/l	EPA # 200.7
on by [redacted] on 10/10/91 Iron	5.02	mg/l	EPA # 200.7
rcury by [redacted] on 10/16/91 Mercury	0.0002	mg/l	EPA # 245.1
rcury Digestion by [redacted] on 10/16/91 Mercury Digestion	10/16/91	M/D/Y	EPA # 245.1
tal Digestion (No Charge) by [redacted] on 10/03/91 Metal Digestion	10/03/91	M/D/Y	EPA - METALS
tal Digestion, Furnace by [redacted] on 09/30/91 M l Digestion	09/30/91	M/D/Y	EPA - METALS
ckel by [redacted] on 10/10/91			EPA # 200.7

ORIGINAL

BCM Laboratory Division
1850 Gravers Road
Norristown, PA 19401
(215) 275-0281

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[redacted] CLIENT

JUNKINS ENGINEERING
ATTN: [redacted]
P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

CM Sample #: 131646
ocation : GRAB
lient ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

Test Description	Results	Units	Test Method
Nickel	< 0.04	mg/l	EPA # 239.2
ead (Graphite Analysis) by [redacted] on 10/10/91 Lead	0.180	mg/l	EPA # 200.7
inc by [redacted] on 10/10/91 Zinc	0.207	mg/l	

BCM Laboratory Division
1850 Gravers Road
Norristown, PA 19401
(215) 275-0281

ORIGINAL
(Red)

F . REPORT
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CLIENT

JUNKINS ENGINEERING
ATTN: [redacted]
P.O. BOX 368
MORGANTOWN, PA 19543

Date : 10/22/91
BCM # : 80-0357-0100
P.O.# :
Order# : 43251

BCM Sample #: 131646
Location : GRAB
Client ID :

Date Sampled : 09/24/91
Date Received : 09/25/91
Sampler :

I. . Description	Results	Units	Test Method

[redacted]

Certified by

Lab Certifications:

PA - 46-007	NJ - 77175	MA	AL - 40300	MD - 136
VA - 00023	SC - 89005	WV	DE	RI
NYDOH - 11136	AIHA - 19401			

ORIGINAL

PLANISOL INC.

WHAT NATURE PROVIDES · PLANISOL PROTECTS ·

LEADERS IN ENVIRONMENTALLY SAFE PRODUCTS

MATERIAL SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200.
STANDARD MUST BE CONSULTED FOR SPECIFIC REQUIREMENTS.

10/3/91

SECTION I: IDENTITY - PLANISOL M
PLANISOL INC. PO BOX 1302 ENGLEWOOD CLIFFS, NJ 07632
(201) 569-2020 JANUARY 29, 1991

SECTION II: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION
PLANISOL M CONTAINS NO HAZARDOUS INGREDIENTS PER OSHA HAZARD COMMUNICATION STANDARD

SECTION III: PHYSICAL / CHEMICAL CHARACTERISTICS
BOILING POINT: N/A SPECIFIED GRAVITY (H2O=1): N/A VAPOR PRESSURE (MM HG): N/A
MELTING POINT: N/A VAPOR DENSITY (AIR=1): N/A EVAPORATION RATE: N/A
APPEARANCE AND ODOR: BLUE POWDER/ODORLESS

SECTION IV: FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: NONE EXTINGUISHING MEDIA: NONE REQUIRED
SPECIAL FIRE FIGHTING / UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

SECTION V: REACTIVITY DATA
STABILITY: STABLE CONDITIONS TO AVOID: NONE
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG ACIDS
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: NONE
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR CONDITIONS TO AVOID: NONE

SECTION VI: HEALTH HAZARD DATA
ROUTES OF ENTRY: INHALATION: X SKIN: X INGESTION: X
HEALTH HAZARDS (ACUTE AND CHRONIC): NONE
CARCINOGENICITY: NTP: NO IARC MONOGRAPHS: NO OSHA REGULATED: NO
SIGNS AND SYMPTOMS OF EXPOSURE: - PROLONGED CONTACT MAY RESULT IN MILD SKIN IRRITATION
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: DERMATITIS
EMERGENCY AND FIRST AID PROCEDURES: EYES OR SKIN - FLUSH WITH WATER
INGESTION - DRINK PLENTY OF WATER, GET MEDICAL ATTENTION
INHALATION - REMOVE TO FRESH AIR

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: FLUSH WITH WATER
WASTE DISPOSAL METHOD: ACCORDING TO FEDERAL, STATE & LOCAL REGULATIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: KEEP CONTAINER DRY
OTHER PRECAUTIONS: NONE

SECTION VIII: CONTROL MEASURES
RESPIRATORY PROTECTION (SPECIFY TYPE): NONE REQUIRED
VENTILATION: LOCAL EXHAUST - ACCEPTABLE / MECHANICAL - NOT REQUIRED
SPECIAL/OTHER - NONE
PROTECTIVE GLOVES: RUBBER / EYE PROTECTION: GOGGLES
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NONE REQUIRED
WORK/HYGIENIC PRACTICES: WASH WITH SOAP AND WATER AFTER USE

ORIGINAL (Red)

MATERIAL SAFETY DATA SHEET

Park Chemical Company
8074 Military Avenue
Detroit, Michigan 48204
(313) 895-7215

SECTION 1

Product Name: AAA QUENCH OIL
Formula Number: BCO 491
Date: 06/14/90

SECTION 2 - HAZARDOUS INGREDIENTS

CAS Registry No.	Ingredient	%	TLV (Othe
8012-95-1	MINERAL OIL	90/100	5 mg/m3

SECTION 3 - PHYSICAL DATA

Boiling Point: NA
Vapor Pressure: .002 mm
Water Solubility: NEGLIGIBLE
Specific Gravity: 0.88

Percent Volatile: NA
Evaporation Rate: NA
pH: NA
Appearance: AMBER COLOR OIL

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: 335 F
Flammable Limits: NA
Extinguishing Media: CO2, DRY CHEMICAL, FOAM (DO NOT USE WATER ON OIL FIRES)

Special Fire Fighting Procedures: NA
Unusual Fire and Explosion Hazards: NA

SECTION 5 - HEALTH HAZARD DATA

ORIGINAL (REC)

Threshold Limit Value: SEE SCT II
Effects of Overexposure: EXCESSIVE INHALATION MAY LEAD TO LUNG DISORDERS.

Emergency and First Aid Procedures: NONE NORMALLY NEEDED. IN CASE OF EXCESSIVE INGESTION, CONTACT A PHYSICIAN.

SECTION 6 - REACTIVITY DATA

Stability: YES
Incompatability: NONE KNOWN
Hazardous Decomposition Products: COx, CHx
Hazardous Polymerization: NO

SECTION 7 - SPILL OR LEAK PROCEDURES

Spill Information: USE OIL-ABSORBANT AND SWEEP UP, DISCARDING AS SOLID WASTE.
Waste Disposal: INCINERATE. THIS MATERIAL IS CLASSIFIED AS A NON-HAZARDOUS WASTE UNDER THE RESOURCE, CONSERVATION AND RECO Y A

SECTION 8 - SPECIAL PROTECTION INFORMATION

Respiratory Protection: NIOSH APPROVED MASK OR RESPIRATOR RECOMMENDED.
Ventilation: MECHANICAL VENTILATION IS RECOMMENDED TO PROTECT AGAINST INHALATION OF OIL MIST.

Protective Gloves: NONE USUSALLY NEEDED.
Eye Protection: SAFETY GOGGLES RECOMMENDED.
Other Protective Equipment: N.A.

SECTION 9 - SPECIAL PRECAUTIONS

Handling and Storage Precautions: STORE IN CLOSED CONTAINER AWAY FROM OPEN FLAME.
Other Precautions: N.A.

Form OSHA-20
Rev. May 72

~~(Type)~~ Power
Furnace

ORIGINAL (Red)

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Triguard Labs	215-699-3539

ADDRESS (Number, Street, City, State, and ZIP Code): 2110 Bethel Road, Lansdale PA 19446

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
CT 200	Phos 6 / Acumer 3100
CHEMICAL FAMILY	**FORMULA**
phosphonate/ Acrylic copolymer	1-Hyroxyethylidene diphosphonic acid + acrylic copolymer

SECTION II - HAZARDOUS INGREDIENTS

COMPOSITION	%	LD_{50} Oral	LD_{50} Dermal	TLV (Units)	COMPOSITION	%	LD_{50} Oral	LD_{50} Dermal	TLV (Units)
H.E.D.P	2.4	see	attached	N/E					
Acry. copolymer	8.0	see	attached	none					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
none		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) 215 F	215 F	SPECIFIC GRAVITY (H_2O=1)	1.12
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/E
VAPOR DENSITY (AIR=1)	1.11	EVAPORATION RATE (B. Acetate =1)	N/E
SOLUBILITY IN WATER	100 %		

APPEARANCE AND ODOR: clear/ slight amber liquid, slight pungent odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
None, Water base			

EXTINGUISHING MEDIA: No fire Hazard

SPECIAL FIRE FIGHTING PROCEDURES: not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS

none

(Continued on reverse side)

ORIGINAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
N/A

EFFECTS OF OVEREXPOSURE
slight irritation to skin, possible substantial irritation to eyes.

EMERGENCY AND FIRST AID PROCEDURES
wash area in contact with soap and water. contact physician if irritation persists. In case of contact with eyes, rinse with water for 15 minutes. Contact physician if irritation persists.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	x	high heat for extended periods of time.

INCOMPATABILITY *(Materials to avoid)*
avoid strong alkali

HAZARDOUS DECOMPOSITION PRODUCTS
oxides of phosphorous and carbon.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	x	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Floor may be slippery. Contain spills immediately with inert materials (sand, earth). Transfer liquids and solid diking material to separate containers for disposal.

WASTE DISPOSAL METHOD

Appropriate protective equipment to be worn when handling a spill of this material. See Personal Protection Measures section.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
none required

VENTILATION	LOCAL EXHAUST N/A	SPECIAL N/A
	MECHANICAL *(General)* N/A	OTHER N/A

PROTECTIVE GLOVES Rubber or plastic	EYE PROTECTION Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
protective clothing to avoid skin contact.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool dry areas.

OTHER PRECAUTIONS
Use good housekeeping practices.

Rohm and Haas Company
Independence Mall West
Philadelphia, PA 19105

ORIGINAL
(Red)

HEALTH EMERGENCY : 215-592-3000
SPILL EMERGENCY : 215-592-3000
CHEMTREC : 800-424-9300

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTIFICATION

ACUMER™ 3100 Polymer

Product Code	:	72339
Key	:	876316-2
MSDS date	:	04/24/91
Supersedes	:	NEW

Rohm and Haas Hazard Rating		Scale
Toxicity	2	4-EXTREME
Fire	0	3-HIGH
Reactivity	0	2-MODERATE
Special	-	1-SLIGHT
		0-INSIGNIFICANT

COMPONENT INFORMATION

[redacted]

EMERGENCY RESPONSE INFORMATION

IRST AID PROCEDURES

Inhalation

Move subject to fresh air.

Eye Contact

IMMEDIATELY flush eyes with a large amount of water for at least 15 minutes. Get prompt medical attention.

Skin Contact

Wash affected skin areas thoroughly with soap and water. Consult a physician if irritation persists.

Ingestion

If swallowed, give 2 glasses of water to drink. Consult a physician. Never give anything by mouth to an unconscious person.

FIRE FIGHTING INFORMATION

Unusual Hazards

Material can splatter above 100C/212F. Polymer film can burn.

Extinguishing Agents

Use extinguishing media appropriate for surrounding fire.

Personal Protective Equipment

As in any fire, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH approved or equivalent) and full protective gear.

SPILL OR LEAK HANDLING INFORMATION

Personal Protection

Appropriate protective equipment must be worn when handling a spill of this material. See the **PERSONAL PROTECTION MEASURES** Section for recommendations. If exposed to material during clean-up operations, see the **FIRST AID PROCEDURES** Section for actions to follow.

Procedures

Keep spectators away. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

HAZARD INFORMATION

HEALTH EFFECTS FROM OVEREXPOSURE

Primary Routes of Exposure

Skin Contact
Eye Contact

Inhalation

Inhalation of high solvent vapor or mist concentrations can cause the following:
- headache - nausea - irritation of nose, throat, and lungs

CONTINUATION

Eye Contact

Material can cause the following:
- substantial irritation

Skin Contact

Prolonged or repeated skin contact can cause the following:
- slight skin irritation

Ingestion

Material is possibly harmful if swallowed.

FIRE AND EXPLOSIVE PROPERTIES

Flash Point	Not Applicable
Auto-ignition Temperature	Not Applicable
Lower Explosive limit	Not Applicable
Upper explosive limit	Not Applicable

REACTIVITY INFORMATION

Instability

This material is considered stable. However, avoid temperatures above 177C/350F, the onset of polymer decomposition. Thermal decomposition is dependent on time and temperature.

Hazardous Decomposition Products

There are no known hazardous decomposition products for this material.

Hazardous Polymerization

Product will not undergo polymerization.

ACCIDENT PREVENTION INFORMATION

COMPONENT EXPOSURE INFORMATION

Component Information

(b) (6)

Exposure Limit Information

Component No.	Units	ROHM AND HAAS TWA	ROHM AND HAAS STEL	OSHA TWA	OSHA STEL	ACGIH TLV	ACGIH STEL
1		None	None	None	None	None	None
2		None	None	None	None	None	None
3		a	a	a	a	a	a

a Not Required

ERSONAL PROTECTION MEASURES

espiratory Protection

A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

e Protection

Use chemical splash goggles (ANSI Z87.1 or approved equivalent).

nd Protection

The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection:
- Neoprene

Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.

FACILITY CONTROL MEASURES

Ventilation

Use local exhaust ventilation with a minimum capture velocity of 100 ft/min. (30 m/min.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment

Facilities storing or utilizing this material should be equipped with an eyewash facility.

STORAGE AND HANDLING INFORMATION

Storage Conditions

Do not store this material near strong bases. The minimum recommended storage temperature for this material is 1C/34F. The maximum recommended storage temperature for this material is 49C/120F.

Handling Procedures

Monomer vapors can be evolved when material is heated during processing operations. See **FACILITY CONTROL MEASURES** Section for types of ventilation required.

SUPPLEMENTAL INFORMATION

TYPICAL PHYSICAL PROPERTIES

Appearance	Clear
Color	Off-white
State	Fluid
pH	2.5-3.0
Viscosity	200 CPS @25°C/77°F Maximum
Specific Gravity (Water = 1)	1.10
Vapor Density (Air = 1)	> 1
Vapor Pressure	24 mm Hg @25°C/77°F
Melting Point	0°C/32°F Water
Boiling Point	100°C/212°F Water
Solubility in Water	Dilutable
Evaporation Rate (BAc = 1)	< 1 Water

TOXICITY INFORMATION

Acute Data

Toxicity data for a compositionally similar material are listed below.
Oral LD50 - rat: >5000 mg/kg
Dermal LD50 - rabbit: >5000 mg/kg
Eye Irritation - rabbit: substantial irritation
Skin Irritation - rabbit: no irritation

WASTE DISPOSAL

Procedure

For disposal, incinerate this material at a facility that complies with local, state, and federal regulations.

REGULATORY INFORMATION

WORKPLACE CLASSIFICATIONS

This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is a 'controlled product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

TRANSPORTATION CLASSIFICATIONS

US DOT Hazard Class . . . . . NONREGULATED

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW (SARA TITLE 3)

Section 311/312 Categorizations (40CFR 370)

This product is a hazardous chemical under 29CFR 1910.1200, and is categorized as an immediate health hazard.

Section 313 Information (40CFR 372)

This product does not contain a chemical which is listed in Section 313 above de minimis concentrations.

CERCLA INFORMATION (40CFR 302.4)

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning

CONTINUED

CONTINUATION

committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304.

RCRA INFORMATION

When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

CHEMICAL CONTROL LAW STATUS

All components of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

ACUMER™ is a trademark of Rohm and Haas Company or one of its subsidiaries or affiliates.

ABBREVIATIONS:

ACGIH = American Conference of Governmental Industrial Hygienists
OSHA = Occupational Safety and Health Administration
TLV = Threshold Limit Value
PEL = Permissible Exposure Limit
TWA = Time Weighted Average
STEL = Short-Term Exposure Limit
BAc = Butyl acetate
Bar denotes a revision from previous MSDS in this area.

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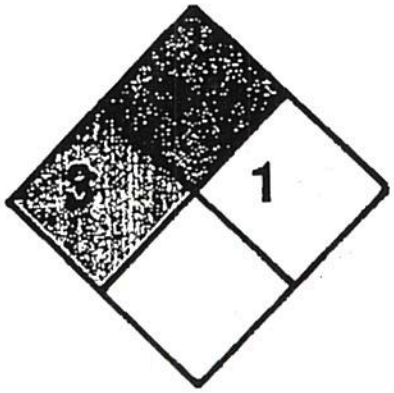
BUCKMAN LABORATORIES, INC.

MATERIAL SAFETY DATA SHEET

PHOS 6

Revision Date: 7/18/91

Phone 1-800-BUCKMAN



Buckman Laboratories, Inc.
1256 North McLean Boulevard
Memphis, TN 38108

24 Hour Emergency Phone
(901) 767-2722

SECTION 1 OSHA HAZARD CLASSIFICATIONS

Corrosive to eyes and irritating to skin.

SECTION 2 HAZARDOUS COMPONENTS

Chemical Name	CAS Number	% by Weight	TLV
(1-Hydroxyethylidene)diphosphonic acid	2809-21-4	60 %	N/A

Total listed: 60 %

The remainder of the components comprise proprietary information.

SECTION 3 PRECAUTIONARY LABEL INFORMATION

This section not applicable to non-biocides.

SECTION 4 FIRST AID INFORMATION

Eye exposure: Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an opthamologist, for further evaluation.
Skin exposure: Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.
Inhalation: If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.
Ingestion: DO NOT INDUCE VOMITING. Rinse with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, DO

NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product seek medical assistance immediately; take individual to nearest medical facility.
NOTE TO PHYSICIAN: No specific antidote is known. Probable mucosal damage may contraindicate the use of gastric lavage. Treat Symptoms. Medical Consultation is available 24 hours a day. Call the Buckman Center for Product Information at (901) 767 7722.

SECTION 5 PRIMARY ROUTES OF EXPOSURE

1. Effects from Acute Exposure:

Eye exposure: Corrosive. Mild to severe (corrosion) irritation depending on the length of exposure, solution concentration and first aid measures.
Skin exposure: Irritant. Irritation will depend on solution strength, length of exposure and first aid measures.
Inhalation: May cause irritation or corrosion of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.
Ingestion: No data is available on human ingestion.

2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been fully evaluated.

SECTION 6 TOXICOLOGICAL INFORMATION

Acute effects:
Acute Oral LD50: 2,400.0 mg/kg
Acute Dermal LD50: > 7,940.0 mg/kg
Irritant effects: Corrosive to eyes. Irritating to skin.
Sensitization effects: Not tested but none expected.
Carcinogenic potential: Not listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic; not tested by Buckman Laboratories, Inc.
Other health effects: None known.

SECTION 7 ENVIRONMENTAL TOXICOLOGICAL INFORMATION

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	clear, colorless to pale yellow liquid
Odor	Mild, vinegar-like
Density @ 25°C	1.48 g/mL
Flash Point	> 212°F
Freezing Point	N/T

Boiling Point	> 212°F
Solubility	Completely miscible with water in all proportions.
pH	1.0
pH (100 ppm in water)	2 - 3
Vapor Pressure	N/T
o/w Partition Coefficient	N/T
Oxidizing/Reducing Properties	Not tested

NOTE: N/A = Not Applicable, N/T = Not Tested

SECTION 9 FIRE AND EXPLOSION INFORMATION

Flammable limits: Not applicable.
Extinguishing media: Water fog, carbon dioxide, foam, dry chemical
Special firefighting procedures: Self contained breathing apparatus is required.

SECTION 10 REACTIVITY INFORMATION

Stability: stable
Incompatibility: strong alkali
Hazardous Decomposition Products: oxides of phosporous and carbon

SECTION 11 HANDLING PRECAUTIONS

Rubber gloves and safety goggles are required.
Body-protective clothing and shoes are required.
Eye-wash fountains in the work area are strongly recommended.

SECTION 12 SATISFACTORY MATERIALS OF CONSTRUCTION

Tested Satisfactory Materials

Polypropylene
Teflon
PVC - rigid
Buna-N rubber
Viton
PVC - flexible
Silicone rubber
Tygon tubing R3603
Van leer epoxy liner 136
polyethylene

NOTE: The materials listed above have been tested with PHOS 6. With respect to all other materials not listed above, user should be aware that use of such materials with PHOS 6 may be hazardous and result in damages to such materials and other property and personal injuries. No data concerning such materials not listed above should be implied by the user.

SECTION 13 SPILL, LEAK, AND DISPOSAL PROCEDURES

SPILL AND LEAK RESPONSE GUIDELINES

ORIGINAL (Red)

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

Initially minimize area effected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, oil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing or pumping spills or leaks of this product to the industrial sewer.

DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

SECTION 14 TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

SECTION 15 REGULATORY INFORMATION

and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):
SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.
SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.
CERCLA (Comprehensive Environmental Response, Compensation and Liability Act: No components of this product are listed.

RCRA (Resource Conservation and Reclaimation Act) Listed Hazardous Wastes: No components of this product are listed.
CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.
FDA (Food and Drug Administration): This product is approved under the following FDA (21 CFR) sections: 21 CFR 173.310

TSCA (Toxic Substances Control Act) Applicability: All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is not a registered pesticide.

HMIS/NPCA Ratings: Health 2; Flammability 1; Reactivity 1
NFPA Ratings: Health 2; Flammability 1; Reactivity 1

STATE REGULATIONS

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inerts please contact Buckman Laboratories' Regulatory Affairs Department.

The information on this Material Safety Data Sheet reflects the latest information and data we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Product Data Sheet is the responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazard Communication regulations.

Buckman Laboratories, Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purposes intended by it in the quantities for use. When used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.

Any controversy or claim arising out of or relating to this contract, or breach thereof, shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgement upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

Form OSHA-20
Rev. May 72

MATERIAL SAFETY DATA SHEET

NOT IN BLEED-OF WATER

Furnaces

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Triguard Labs	EMERGENCY TELEPHONE NO.: 215-699-3539
ADDRESS (Number, Street, City, State, and ZIP Code): 2110 Bethel Road, Lansdale, PA 19446	
CHEMICAL NAME AND SYNONYMS: CL 250 M	TRADE NAME AND SYNONYMS: sodium molybdate
CHEMICAL FAMILY: Molybdate	FORMULA: Molybdic acid, disodium salt

SECTION II - HAZARDOUS INGREDIENTS

COMPOSITION	%	LD_{50} Oral	LD_{50} Dermal	TLV (Units)
Sod. Molybdate	10	see attached		

COMPOSITION	%	LD_{50} Oral	LD_{50} Dermal	TLV (Units)

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
none known		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212 F	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.)	0 @ 200	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (~~B. Acetate~~=1)	N/A
SOLUBILITY IN WATER	100% soluble		
APPEARANCE AND ODOR	Clear odorless liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): None - water based	FLAMMABLE LIMITS: none	Lel	Uel
EXTINGUISHING MEDIA: water base			
SPECIAL FIRE FIGHTING PROCEDURES: N/A			
NUSUAL FIRE AND EXPLOSION HAZARDS: None			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
5 ppm (OSHA)

EFFECTS OF OVEREXPOSURE
May result in eye, skin or respiratory tract irritation.

EMERGENCY AND FIRST AID PROCEDURES

If irritation of eyes or respiratory tract occurs, rembve from exposure flush eyes for 15 minutes with water and call physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	x	none known

INCOMPATABILITY *(Materials to avoid)*
none known

HAZARDOUS DECOMPOSITION PRODUCTS
none

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	x	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Clean up by vacuuming with wet vac. Wear protective gloves and eye protection.

WASTE DISPOSAL METHOD
Dispose of in accordance with local, state and federal laws and regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Use NIOSH/MSHA approved respirator if exposures exceed the OSHA limit.

VENTILATION	LOCAL EXHAUST	SPECIAL	
	N/A	N/A	
	MECHANICAL *(General)*	OTHER	
	N/A	N/A	

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or plastic	Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Protective clothing to avoid skin contact.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in cool dry areas.

OTHER PRECAUTIONS
Use good housekeeping practices.

QUAKER CHEMICAL
(215) 533-4105

CLIMAX METALS COMPANY

A subsidiary of AMAX Inc

ORIGINAL (Red)

JUN

MATERIAL SAFETY DATA SHEET

SODIUM MOLYBDATE
(Crystalline)

PRODUCT IDENTITY	EMERGENCY CONTACT
MICAL NAME: MOLYBDIC ACID, DISODIUM SALT DE NAME: SODIUM MOLYBDATE, (CRYSTALLINE) MULA: $Na_2MoO_4 \cdot 2H_2O$ NO.: 10102-40-6 SICAL FORM: POWDER	DIRECTOR, LOSS PREVENTION CLIMAX METALS COMPANY 1626 COLE BOULEVARD GOLDEN, COLORADO 80401-3292 TELEPHONE NO.: (303) 231-0320 CHEMTREC: 1-800-424-9300 U.S. & CANADA (202) 483-7616 INTERNATIONAL

COMPOSITION

MATERIAL	CAS NO.	%	PERMISSIBLE AIR LEVEL
Sodium Molybdate (Crystalline)	10102-40-6	100.0	OSHA &ACGIH = 5 mg/m³

HEALTH HAZARD INFORMATION

MARY ROUTE OF ENTRY: Inhalation, eye and skin contact

IP IS AND EFFECTS OF TE OVEREXPOSURE: May result in eye, skin or respiratory tract irritation.

ONIC OVEREXPOSURE: USSR studies in 1961 & 1966 found signs of gout in factory workers and among inhabitants of bdenum rich areas of Armenia. However, a 1979 U.S. study found no evidence of molybdenum induced gout in factory kers.

L CONDITIONS THAT MAY BE AGGRAVATED BY THIS MATERIAL:
Chronic respiratory disease.

ium Molybdate is not considered to be carcinogenic by the NTP, IARC or OSHA.

EMERGENCY AND FIRST AID PROCEDURES

rritation of the eyes, nose, throat, or respiratory tract occurs, remove from exposure, flush eyes h water for 15 minutes and call a physician.

TOXICOLOGICAL INFORMATION

TYPE STUDY	SPECIES	TOXICITY
ute Oral	rat	LD_{50} = 2810 mg/kg
Inhalation (4 hour)	rat	8.68 mg/l - no effect
rmal Irritation	rabbit	0.5 grams - not an irritant
e Irritation	rabbit	mild irritant

ORIGINAL (Red)

EXPOSURE CONTROL MEASURES

INEERING: Use ventilation to maintain exposure levels within the OSHA limit.

SONAL PROTECTIVE EQUIPMENT: Use a NIOSH/MSHA approved respirator if exposures exceed the OSHA limit. Wear eye protection and gloves when handling this material.

REACTIVITY DATA

BILITY: This material is stable.

OMPATIBILITY: None known.

ZARDOUS DECOMPOSITION PRODUCTS: None

ZARDOUS POLYMERIZATION: Will not occur.

FIRE and EXPLOSION HAZARD DATA

IS MATERIAL IS NOT FLAMMABLE.

ECIAL FIRE FIGHTING PROCEDURES: Wear protective fire fighting clothing and self-contained breathing apparatus.

UAL FIRE AND EXPLOSION HAZARDS: None

PRECAUTIONS FOR SAFE HANDLING AND USE

RECAUTIONS FOR HANDLING AND STORAGE: None necessary.

TEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Clean up by vacuuming to minimize dust exposure. rovide clean-up employees with respirators for dusty conditions eye protection and gloves.

/ASTE DISPOSAL METHODS: Dispose of in accordance with federal, state and local laws and regulations.

PHYSICAL/CHEMICAL CHARACTERISTICS

MELTING POINT: 687°C

SPECIFIC GRAVITY ($H_2O = 1$): 2.56

VAPOR PRESSURE @ 20°C: Essentially 0.

SOLUBILITY IN WATER: 56 gm/100 cc @ 0°C

APPEARANCE AND ODOR: White, odorless powder.

ENVIRONMENTAL REQUIREMENTS

TSCA - Sodium Methoxide (Crystalline) was reported on the initial TSCA inventory.

DATE: May 22,

Analysis Report

Lancaster Laboratories
Where quality is a science.

04:05:13 325375
ASR000 D 1 2
06441 0

ORIGINAL (Red)

Junkins Engineering
200 Bethlehem Drive, Suite 205
PO Box 368
Morgantown, PA 19543-0368
Outfall #1 - Sample 2 Grab Water Sample

LLI Sample No. WW 1760564
Date Reported 1/29/92
Date Submitted 1/14/92
Discard Date 2/ 6/92
Collected 1/14/92 by CDL
Time Collected 0400
P.O. 8925
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
pH	6.62		0.01	020000700
Total Suspended Solids	5.	mg/l	4.	020601400
Kjeldahl Nitrogen	2.7	mg/l	0.2	021702000
Nitrite Nitrogen	0.10	mg/l	0.02	021900800
[illegible]ate Nitrogen	2.1	mg/l	0.5	022000700
Ammonia Nitrogen	2.0	mg/l	0.5	022102800
Total Phosphorus as P	0.07	mg/l	0.05	022702200
Oil & Grease	4.	mg/l	2.	023105500
The blank analyzed with this sample contained 3.2 mg/l of oil and grease. As directed in EPA method 413.1, the data reported above was corrected for the blank value.				
Biochemical Oxygen Demand	< 6.	mg/l	6.	023503300
Cyanide, Total	< 0.005	mg/l	0.005	023704000
Mercury	< 0.0005	mg/l	0.0005	025902500
Hexavalent Chromium	< 0.02	mg/l	0.02	027602400
Aluminum	< 0.2	mg/l	0.2	174301400
Cadmium	< 0.005	mg/l	0.005	174901400
Copper	< 0.02	mg/l	0.02	175301400
Lead	< 0.05	mg/l	0.05	175501400
Nickel	< 0.04	mg/l	0.04	176101400
C	0.16	mg/l	0.02	177201400
Chemical Oxygen Demand	< 50.	mg/l	50.	400102900

The analysis for Total Kjeldahl Nitrogen was performed at one of our affiliate laboratories as previously discussed.

1 COPY TO Junkins Engineering ATTN: [redacted] Not Responsive Based on Revised Scope

Questions? Contact Environmental Client Services at (717) 656-2301
377 06441 50.00 044600

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

[redacted] Not Responsive Based on Revised Scope
Group Leader, Water Quality

ORIGINAL
(Red)

JUNKINS ENGINEERING
Water • Wastewater • Hazardous Waste • RTK/SARA Compliance

200 Bethlehem Drive, Suite 205
P.O. Box 368
Morgantown, PA 19543-0368
(215) 286-2825

LETTER OF TRANSMITTAL

DATE 1/31/92	JOB NO. 8925
ATTENTION: [redacted]	
RE: Stormwater Sampling	

WE ARE SENDING YOU (✓) Attached ( ) Under separate cover via _____ the following items:

( ) Shop drawings ( ) Prints ( ) Plans ( ) Samples ( ) Specifications

( ) Copy of letter ( ) Change order ( ) _____

COPIES	DATE	NO.	DESCRIPTION
1	1/14/92		Analysis Report and Chain of Custody Papers

THESE ARE TRANSMITTED AS CHECKED BELOW:

( ) For approval ( ) Approved as submitted ( ) Resubmit ___ copies for approval

(✓) For your use ( ) Approved as noted ( ) Submit ___ copies for distribution

( ) As requested ( ) Returned for Corrections ( ) Return ___ corrected prints

( ) For review and comment ( ) _____

( ) FOR BIDS DUE _____ 19 _____ ( ) PRINTS RETURNED AFTER LOAN TO US

REMARKS: Harry, These results are the best we have seen for any of our Sampling sites. We will keep you posted on the progression of the permit application. You will receive a copy of the materials and methods section regarding your particular site, as soon as I have time to formally write it up.- HA HA HA...

COPY TO: _____

SIGNED [redacted]

APPENDIX D

HOMEWELL SURVEY FORMS

ORIGINAL (Red)

HOME WELL SURVEY

Robert Wooler Company
P. O. Box 300
Dresher, PA 19025

Home Owner's Name: _____ Date: 03/15/89

Address: _____ Home Phone: _____

_____ Work Phone: 215-542-7600

_____

1. Please describe the type of home well you presently utilize:
(Check those which apply)

_____ Dug well

__X__ Drilled by a rig; if so, please identify company (name, address, and phone):

_____

_____

_____

_____ Other (describe) _____

1a. Please estimate the following: Year installed 1939-1950

Date of last service _____

Company who serviced (name, address, and phone): N/A

_____

_____

2. Please provide the following measurements of your well:

a. Total depth: 200 ft.

b. Well diameter: 8"

3. Please describe the casing material used in your well:

a. Composition

__X__ Iron _____ PVC _____ Galvanized _____ Terra Cotta

_____ Other - Please Specify (if known)

b. Length (if known): 85 ft.

ORIGINAL (Red)

ORIGINAL (Red)

HOME WELL SURVEY

Robert Wheeler Company
P.O. Box 300
Dresher, PA 19025

Home Owner's Name: _____ Date: _____

4. Please describe, if known, any screening material used in your well:

   a. Length of screen: N/A

   b. Depth of screen in well: N/A

5. Please indicate, if known, the depth to the groundwater in your well (from the surface):

   18 ft.

6. Please indicate the composition of home plumbing (pipes) in your system:

   ____ Iron X PVC ____ Galvanized ____ Lead

   ____ Other (describe): _____

7. Please describe the water pump used in your system:

   a. Location of the pump

   ____ Inside the well (submersible pump); Depth in well: _____

   X Outside the well (indicate location) (b) (9) [redacted]

   b. Type of pump

   Branch (if known): _____

   Capacity (gallons per minute): _____

   c. Estimate hours of pump operation per day: _____

   d. Is storage tank used: X Yes ____ No

   Type (material) galv. steel Capacity _____

8. a. Do you regularly or have you ever added chemicals directly to your well?

   (i.e., chlorine, clorox, etc.) ____ Yes X No

   If yes, date last added: _____ Approximate amount added _____

   Compound (brand name): _____

4/20/88

ORIGINAL (Red)

HOME WELL SURVEY

Robert Wooler Company
P. C. Box 309
Dresher, PA 19025

Home Owner's Name: _____ Date: _____

b. Please describe any type of water treatment you are currently using (check those which apply):

_____ Filtration

Type: _____

_____ Water Softeners

Indicate Brand: _____

N/A Other (explain)

_____

_____

_____

9. Please indicate any testing that has been done on your water:

Date of testing: N/A

Name of individual(s) responsible for testing: _____

10. Well Use: _____ Drinking _____ Other: cooling water

11. Do you notice color, taste, or odor problems with well water? _____ Yes X No

If yes, identify: _____

Do you notice water supply problems? _____ Yes _____ No

If yes, when: _____ how often: _____

12. Please indicate the type(s) of wastewater system used (check):

Sewer Line X

Septic Tank _____ Cesspool _____ Drain Field _____

Distance to Well _____

13. We may be taking water samples from many area homes in the near future. If your well is chosen for sampling, would you be willing to allow our NUS representatives to sample your well? Sampling involves collecting water from one of your indoor or outdoor spigots.

X Yes, I will allow my well to be sampled.

_____ No, I will not allow my well to be sampled.

ORIGINAL (Red)

HOME WELL SURVEY

Robert Wooler Company
P. O. Box 300
Dresher, PA 19025

Home Owner's Name: _____ Date: _____

If yes, please indicate the time of day which would be convenient for us to sample.

__X__ Morning __X__ Afternoon _____ Evening

14. In the space below, please furnish a rough sketch of your property, indicating the location of your well and on-lot wastewater system, if applicable. Also indicate the location of the spigot you would prefer us to sample.

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)

APPENDIX E

WATER WELL INVENTORY

PENNSYLVANIA WATER WELL INVENTORY DATA FILE---PRINTOUT GUIDE

ORIGINAL (Red)

WELL NUMBER --FOLLOWED BY 'N' DENOTES OFFICE LOCATION; NONVERIFIED EX:0023N
--FOLLOWED BY 'F' DENOTES FIELD VERIFICATION OF LOCATION EX:0913F
--STARTING WITH 'UL' DENOTES NO LOCATION DETERMINED (OFFICE OR FIELD) EX: UL0019
--STARTING WITH 'X' DENOTES RECORDS FROM OLD DATA SET CONVERTED TO NEW FORMAT EX: X 0012

*Location accuracy code: M - Minute, F - 5 Seconds, T - 10 Seconds, S - Second

Topography: D - Depression, K - Sink, T - Terrace, C - Stream Channel, L - Swamp, V - Valley flat, F - Flat, S - Hillside, W - Upland draw, H - Hilltop

Aquifer: See AAPG CODES

*Hydrologic Unit: USGS HYDROLOGIC UNIT NUMBER

Water Use: H - home (domestic), I - Irrigation, B - Bottled, P - Public, S - Stock, N - Industrial, T - Institution

Well Use: W - Water supply (withdrawal), T - Test, Z - Destroyed, U - Unused (abandoned, dry hole), R - Recharge, M - Monitoring, H - Heat reserv. (heat pump), O - Observation

Well Finish: X - Open Hole, S - Screen, P - Perforated, Z - Other

Please Note: For some counties, the 2-letter county code precedes well numbers on 7.5 maps.
Ex: Mf329
Sc910
Lu53

*Well Grouted: Y - Yes N - No

Date Drilled: 07-00-81

*Test Method: E - Estimated or blown (air), B - Bailed, V - Volumetric (pumped, watch and bucket, weir), O - Orifice, M - Meter

Rock Type: (from drillers log)

cl - clay, sh - shale, ls - limestone, s - sand, ss - sandstone, d - diabase, g - gravel, cgl - conglomerate, sch - schist, sl - slate, gn - granite, o - other

REMARKS: SPECIAL NOTES AND FIELDS CODED 'OTHER'

*These fields are not shown on the printout; they are available upon request.

See Reverse for Additional Comments

(b) (9), (b) (6)

(b) (9), (b) (6)

(b) (9), (b) (6)